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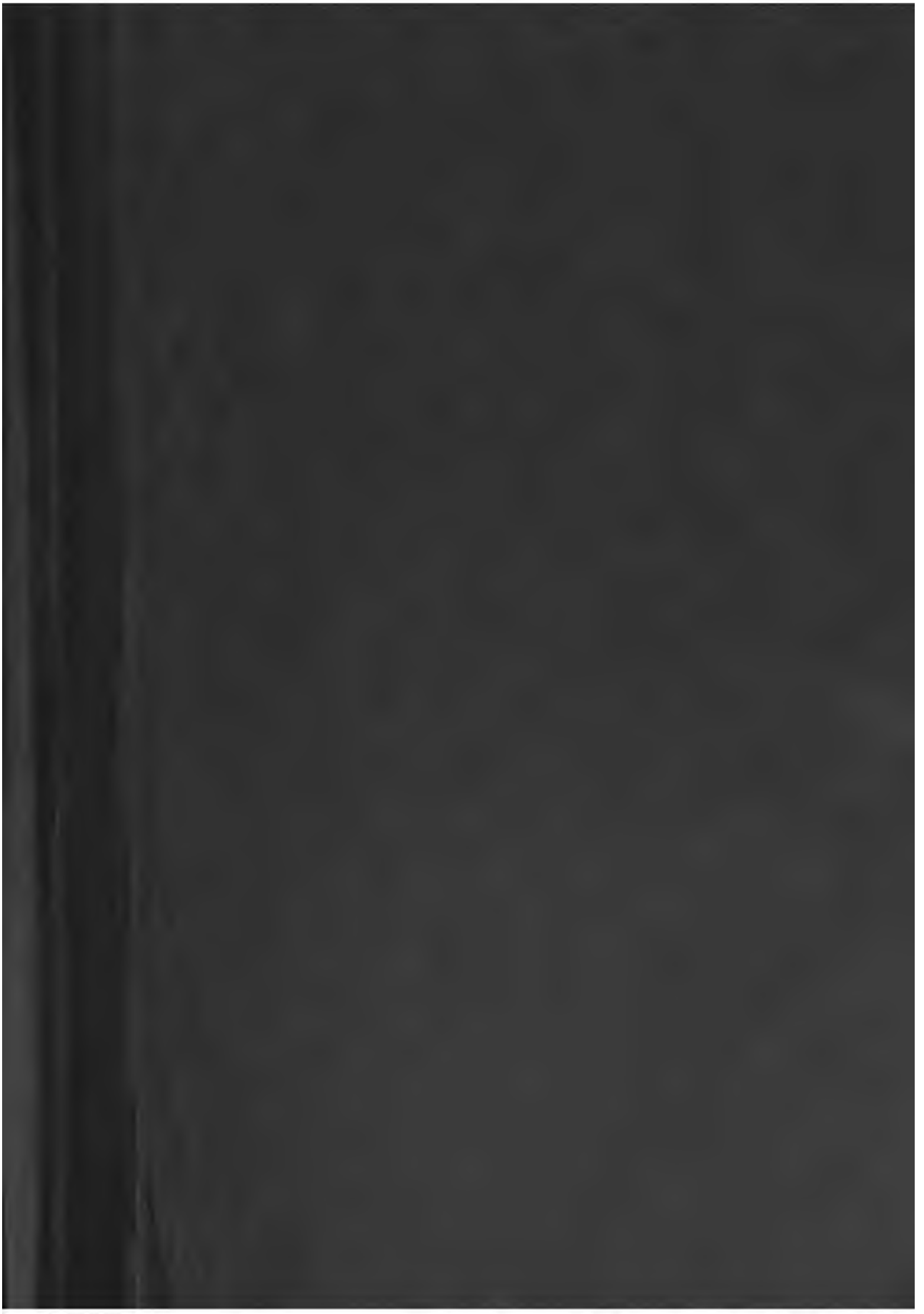

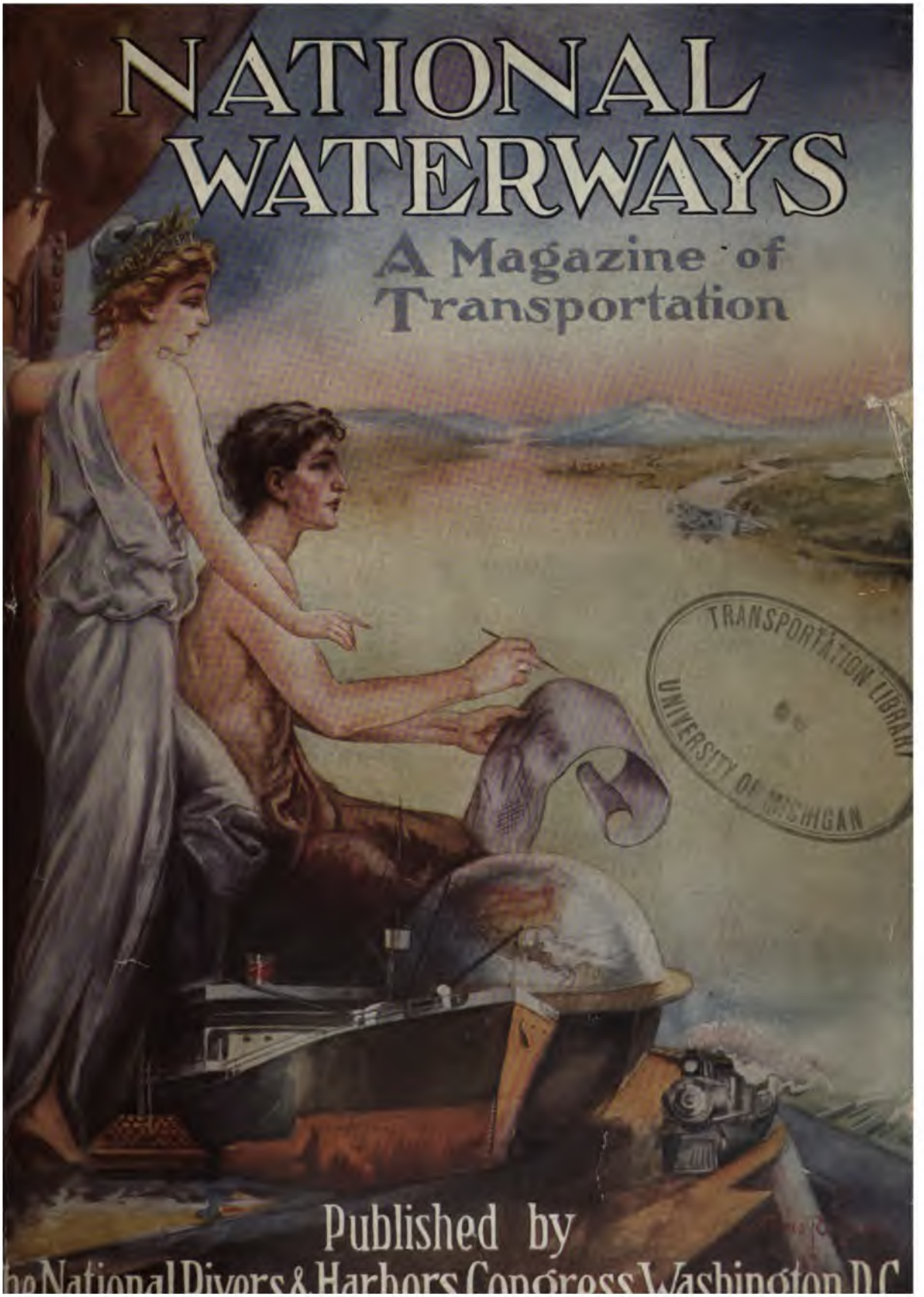
NATIONAL
WATERWAYS
A Magazine of
Transportation
TRANSPORTATION LIBRARY
UNIVERSITY OF MICHIGAN
Published by
the National Rivers & Harbors Congress Washington D.C.

FOREWORD

NATIONAL WATERWAYS with this its initial issue makes its bow to the public. The magazine enters the field without any blare of trumpets, flurry of flags, or extravagant promises. The publishers believe that they have produced a good magazine, good both from points of contents and appearance—a good magazine of which this initial issue is but a fair sample and not a special effort. With the cooperation of our readers we hope to improve our product rather than to lower the standard here set.

It is the usual custom to make the statement of a new publication that it is here and here to stay. NATIONAL WATERWAYS *is* here to stay. It is here to work earnestly in the cause of waterway improvement. It is here to entertain, to instruct, and to please. Study well the pages submitted in this issue, and if we gain your approval, tell us so. If we do *not* reach your ideas, again tell us so, for NATIONAL WATERWAYS is its readers' magazine—*your magazine.*

NATIONAL RIVERS AND HARBORS CONGRESS.

VOL. 1 No. 1

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*

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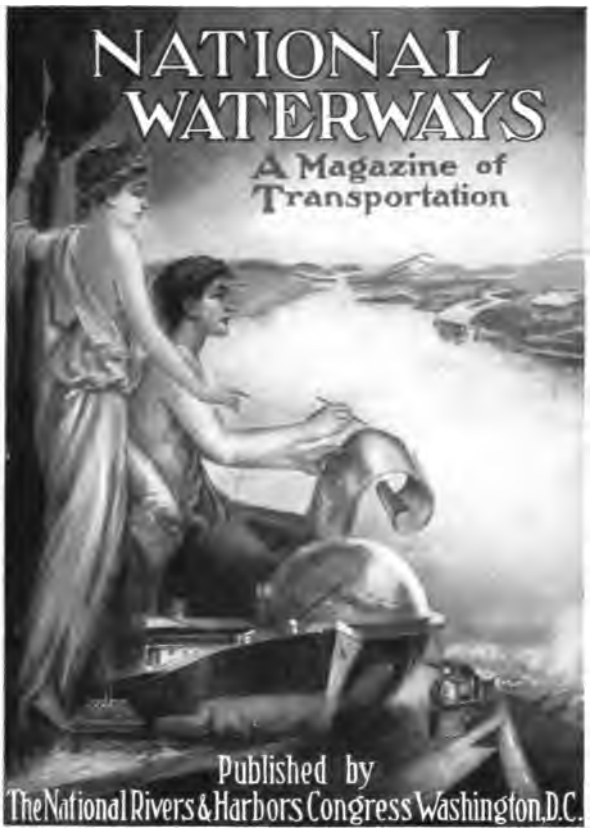
THE VALUE OF AN INTRODUCTION



TO APPEAR AS AN ADVERTISER IN NATIONAL WATERWAYS IS TO RECEIVE AN INTRODUCTION THAT AMOUNTS TO A POSITIVE RECOMMENDATION TO THOUSANDS OF THE MORE SUBSTANTIAL AND PROMINENT PEOPLE IN THIS COUNTRY

"Mr. Smith, this is Mr. Jones, who has my full confidence. He desires to talk a moment with you on a worthy proposition that I think will interest you."

Now—

The man speaking is—say Mr. Johnson. You know Mr. Johnson. He was, perhaps, with you at school—at any rate, you and he have been long associated and together have worked out some big problems. You value his judgment. You know he is sincere, but, best of all, you know he is honest and wishes you well.

Would you listen to Mr. Jones? Wouldn't you be interested by what he had to say? You would, wouldn't you?

Well—

Readers of NATIONAL WATERWAYS have long been associated with its publishers. They have, as members of the National Rivers and Harbors Congress, together worked out some big problems—problems that have much to do with the millions now being spent by the Government on waterway improvement. They expect to believe and have a right to believe that the recommendation given to any proposition through the pages of this magazine is correct and that the copy is clean.

We shall be pleased to present you—

If you have that kind of a proposition; if you write that kind of copy; our pages are cordially open to you and our introduction to our readers will carry an actual guarantee of you as an advertiser. Our readers, too, will appreciate your support, for this publication is decidedly its readers' magazine and is not a commercial one; there are no stockholders and no dividends are expected to accrue. Every dollar that is received goes right back into the magazine to improve its quality, to extend its circulation and to help the cause it represents.

When you advertise with us you secure a positive recommendation to thousands of the more substantial and prominent people in this country. At the same time you are addressing an audience that appreciates fully your support. Where else can you find this ideal combination of quantity, quality and attention?

NATIONAL WATERWAYS.

THE LARGEST SHIP AFLOAT

HAMBURG-AMERICAN *S. S.* IMPERATOR

Courtesy Hamburg-American Line

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NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I NOVEMBER, 1912 NUMBER 1

THE CHARM OF FOREIGN WATERWAYS

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

MR. AND MRS. ALBRECHT have for many years spent much time traveling in foreign lands. They have not followed in the beaten paths of the tourist but have sought out the unfrequented places and have made faithful records, he with the camera and she with the pen, of all that was quaint and beautiful. These they have together woven into many charming articles, which have had wide publication in leading periodicals.

TO that happy traveler whose itinerary has once included Venice, "waterway" forevermore invites a vision of blue, rippling water, of umber sails, of somber gondolas with silvery fringes, of stately old palaces and bubble-like domes all doubled by reflection, of dazzling sunshine and purple shadow, and the far cry of gondoliers mingled on the wind with the perfume of oleanders and the salt tang of the sea. But not every city can be a Venice—fortunately, indeed—and while she reigns mistress of waterways forever there is no sting of reproach in the inspiration that she freely offers; her problems are not ours, her beauty is unique, we cannot aspire to it. But is this true of all her sister cities? Can we look upon the Tiber tamed between stone quays, made Rome's servant, rather than its master, yet losing not a tithe of beauty in its restraint; upon the Seine rippling beneath Paris bridges; upon the Thames mirroring Westminster's towers; upon the Elbe as it hurries by Dresden's quays, and not feel that our river-washed cities have wasted opportunities both for beauty and profit?

Water, while being made useful, need not necessarily be made hideous. If we, youngest among the great nations, have taught to the older peoples something of easy living, of the comfortable possibilities of good plumbing and porcelain bathtubs, the advantages of vestibuled trains, of steam heat, of elevators, matters of which every returning tourist boasts, there seems yet no need for undue elation; we have certainly much to learn from those lands across the sea.

Rich endowment we have had of lakes, streams and rivers. Water lovers we profess to be, yet how have we used our waters? Only too often in making it useful, a river has been rendered ugly; when effort has been expended to preserve

THE CANAL THAT RUNS THROUGH THE HEART OF BRUGES FROM THE QUAI DES MARBRIERS

its natural beauty a stream is frequently made useless. Is that necessary? Cannot utility and beauty be made to dwell together?

The little, old cities of the Netherlands have made a useful servant of their one-time enemy — water — and who that knows them will not say how much the lovelier they are for that water girdle which rings them amid their green meadows, even while it serves them as a pathway for going and coming freight?

FLORENCE CRAIG ALBRECHT

Amsterdam, Venice of the North, as a poetic traveler named her, is ribbed and ringed with canals upon which heavy barges are incessantly moving, yet who can think that Heerengracht, stateliest of ancient streets, loses one whit of its dignity because a blue-bloused boatman poles a high-piled barge under the shadow of her lindens, its ripples setting all the placid gable reflections a-quiver?

And that magnificent windmill upon the Coolvest at Rotterdam! Is it any the less lovely that its great wings are mirrored in dancing water, that a white-sailed boat glides quietly to a mooring by its side? Is the water less clear, less joyous under the sky's clear blue, less radiant under the beams of sun or moon, that it also serves as burden-bearer for a great city?

What great waters sweep by Dordrecht and through it, and around it, and how proudly its old church sits there, although today it has much ado to raise its great tower above the slender masts that crowd thickly about it! Ah well! Dordrecht is perhaps, like Venice, a city apart and not to be compared with others, nor yet used as a lesson book—but what one of our river-set cities of twice its size and wealth can compare with it in picturesqueness and service?

Breda, town of many warlike memories, though now so stilly peaceful, is ringed by the Mark and the Aa, two tiny rivers that have been taught to serve it well; as a moat in the days of its sieges, as a pathway for its present small commerce, and with sodded and tree-planted banks to adorn and frame it as well. The stately old gray church-tower soaring among green branches into a turquoise sky, the scarlet roofs of the low houses, the dark walls, the luxuriant foliage, are all reflected in the azure mirror at their feet. An unpretentious town, sleeping placidly amidst its meadows, is made a lovely memory through its water-given beauty. And Zierikzee, with its beautiful old gates, its quaint gables—how much the lovelier is it for the water which reflects them, the water without which it could not exist! By waterways alone it meets its neighbors, it sells its products, it buys for its needs, and Zierikzee, although very tiny and very old, has taken care that the mirror which perpetually surrounds it and at which it must look daily shall at least afford pleasant pictures. Or so it seems to me, for at Zierikzee no rickety wharves, no squalid sheds are doubled to tease one's eyes as at some nearer towns one might mention, but substantial walls, stout-towered gateways, tall trees, look down upon the waters, the green-grayness now and then made gay by a scarlet roof, a blue blouse, the glint of gold and coral under a white cap when a head peers from a window above the wall or a pretty maid walks beneath the trees. One may go to Zierikzee by a modern and comfortable steamboat—one usually does go that way—but the poetic way is to sail up under its walls in some dark old *tjalck* with brown sail wide-spread, and at the tiller a picturesque young blond skipper like our friend Klaas Kees of Marken. Zierikzee would be jealous if one brought a man from the Zuyder Zee to sail her waters, but if one has come by boat—as one can—all the way from Urk or Volendam, Kampen or Marken, of course she has nothing to say. As to the picturesque side of the question, it would not be worth while to explain; Zierikzee would not understand. She is not self-conscious—that is so far as beauty goes; that, perhaps, is her greatest charm.

I am not sure the same is true of Bruges. She is very old and very sad, we are instructed, but I don't half believe it. Old—yes, undoubtedly—and no longer prosperous as she once was prosperous, a

OLD GUILD HOUSES ON THE QUAI AUX HERBES—THE RIVER LYS, GHENT

ON THE CANAL FROM ROTTERDAM TO DELFT

ON THE SINGEL GRACHT, AMSTERDAM—THE RYKS MUSEUM

VENICE—LOOKING FROM THE MOLO TO SAN GEORGIO—"A VISION OF BLUE, RIPPLING WATER, OF SOMBER GONDOLAS WITH SILVERY FRINGES"

THE NOBELPOORT AT ZIERIKZEE ON THE ISLAND OF SCHOUWEN, HOLLAND

great commercial city important in the world's markets. But she has a great many visitors and that spells another kind of prosperity, so, I fancy, under her air of quiet sorrow she chuckles a bit in her sleeves; that air is a part of her attraction, and she knows it. I may, however, be quite mistaken; travelers' impressions are untrustworthy unless backed by statistics. Of her loveliness there is no question. The commerce for whose accommodation those stone-lined canals were constructed may have all departed. Their beauty remains. One realizes what Bruges must have been in the days of her prime, when gay courtiers and rich merchants thronged her market places and all those grave canals, where swans now sail so quietly, whose ripples are set infrequently a-dancing by one slow-moving boat, were covered with heavily-laden barges bearing all the spoils of the East to Northern courts.

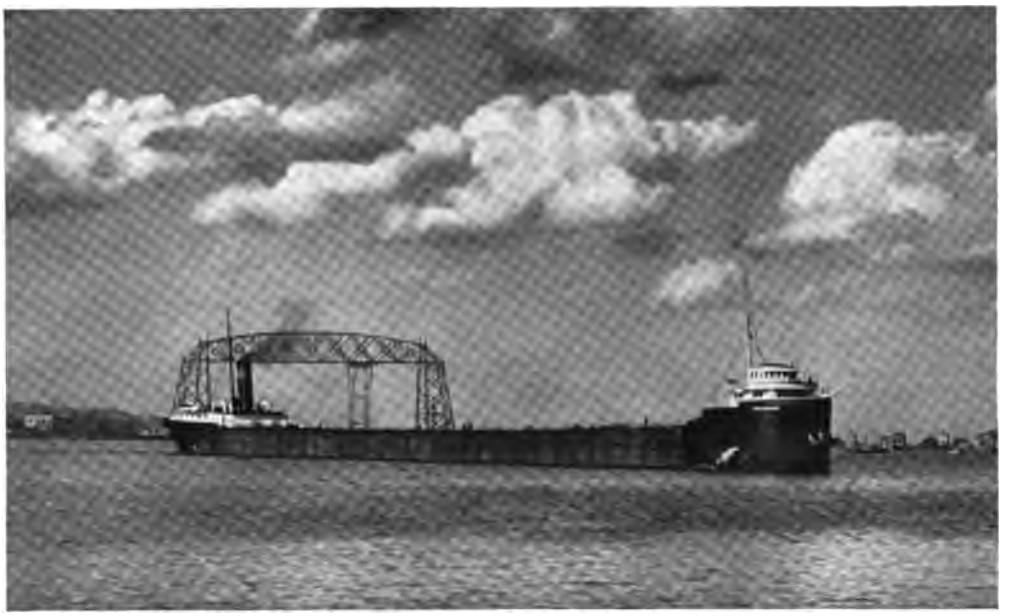
KLAAS KLEES OF MARKEN

What cities and towns scarcely more populous than one of our wards could do five centuries ago for commerce and for adornment surely rich American cities could do today. It is perhaps too much to demand of a utilitarian people that the water given so plentifully to their hand shall be used solely for decoration. To him who recalls the tinkling and rippling of waters in French and Italian gardens, the refreshing coolness they brought at hot noondays, who remembers longingly on a sultry summer day in his own arid town—arid as a desert—although it lies between two great rivers—the fountains of Paris and Rome, the beauty does not seem that of uselessness, the expenditure an extravagance. Still less extravagant would seem that investment of money which should make of our rivers and canals what Europe has made hers, things of beauty as well as of service, the promenade upon their banks a pleasure place for the people, their smooth waters a roadway from town to town, from field or factory to market.

THE FOUNTAIN OF TREVI, ROME

"TO HIM WHO REMEMBERS LONGINGLY OF A SULTRY SUMMER DAY THE FOUNTAINS OF PARIS AND ROME THE BEAUTY DOES NOT SEEM THAT OF USELESSNESS"

THE HANDLING OF IRON ORE ON THE GREAT LAKES



STEAMSHIP LADEN WITH IRON ORE LEAVING DULUTH, MINN., AT THE HEAD OF LAKE SUPERIOR, FOR THE LOWER LAKES. NOTE THE AERIAL FERRY BRIDGE WHICH SPANS THE SHIP CANAL, IN THE BACKGROUND

SIX of every seven of the 84,628,657 net tons of domestic freight shipped in 1910 from American ports on the Great Lakes were handled in bulk cargoes. More than half, 46,500,000 net tons, was iron ore, 22,600,000 tons were coal and over 3,000,000 tons were grain.

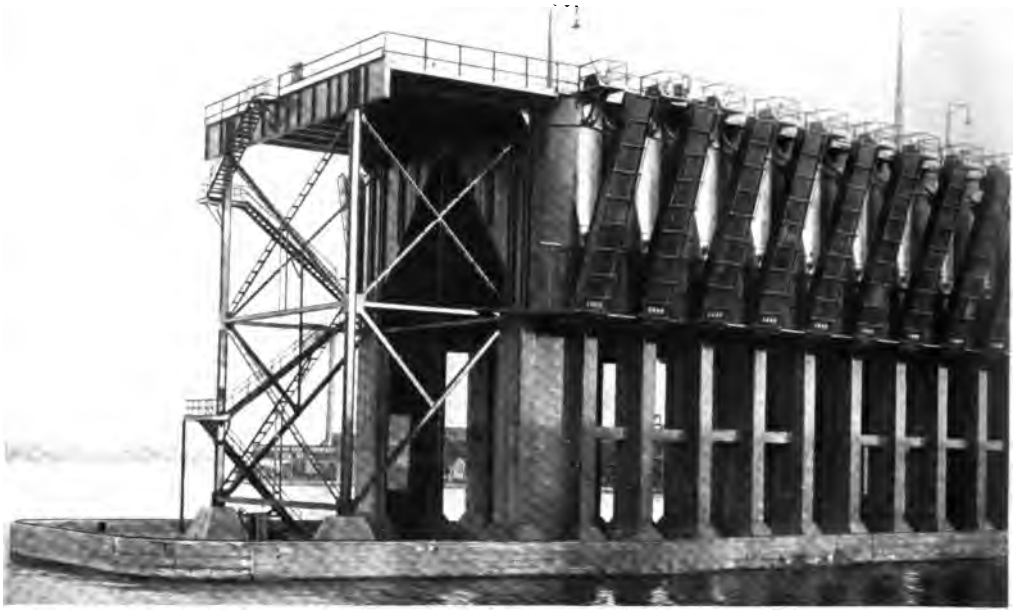
With such an enormous traffic to be served it is, perhaps, not to be wondered at that inventive genius has been busy; that highly specialized types of ships, docks and appliances for loading and unloading bulk cargoes have been evolved; and that such cargoes are handled in less time and at less cost in the harbors of the Great Lakes than in any other ports in the world.

In 1855, when the Soo Canal was first opened, 1449 tons of iron ore were shipped from Lake Superior. Many men and many days were occupied in loading this ore into the little schooners which carried it to Cleveland, and the unloading took longer still. The freight paid was $3.00 per ton. In 1912 the total shipments from the Lake Superior region will probably be 45,000,000 tons—and most of it will be carried at a freight rate of 40 cents per ton.

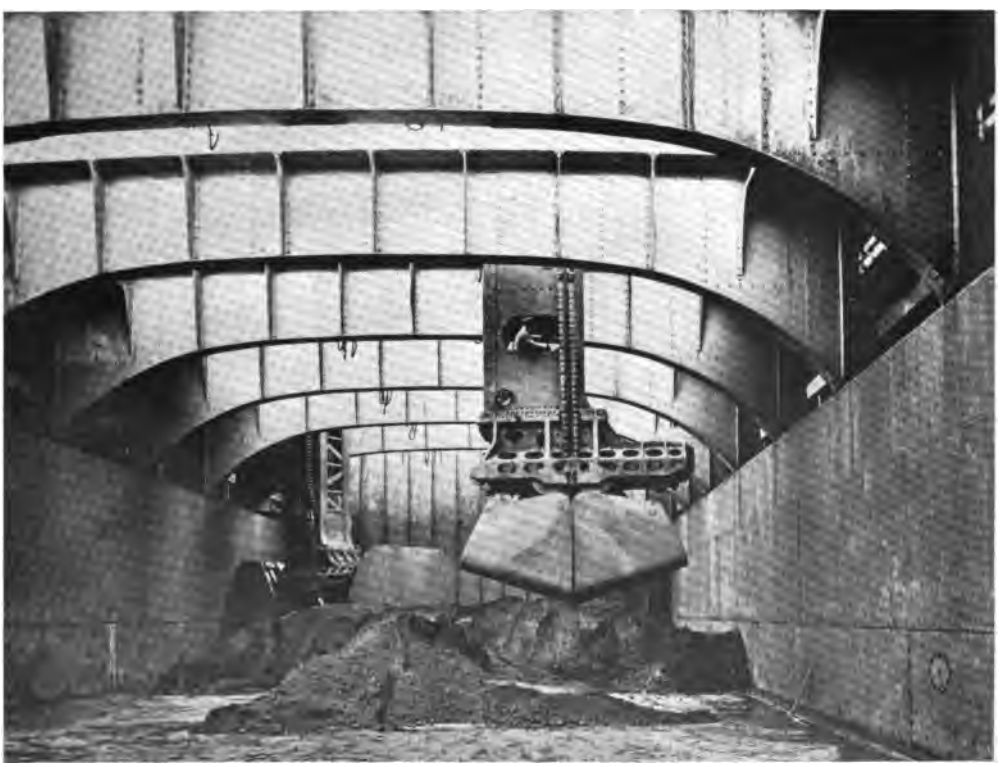
Methods of loading and unloading have changed even more than rates of freight. The modern ore dock is a huge structure, generally of timber, although the very latest type is made of concrete and steel. These docks rise 75 or 80 feet above the water and some of them are nearly half a mile in length.

The ore is hauled to the dock in hopper-bottomed cars and dropped into storage bins, or "pockets" as they are usually called. When the ship comes alongside the dock the chutes are let down, the slides drawn up, and the ore goes rushing into the hold at the rate of hundreds of tons a minute, while the great ship sinks swiftly down into the water as she gets her load.

Great Northern Dock No. 4, shown in the illustration, made the world's record



ONE OF THE GREAT NORTHERN ORE DOCKS AT ALLOUEZ BAY, SUPERIOR, WIS. THE MODERN ORE DOCK BOTH SIDES OF THE DOCK CAN BE USED AT ONCE. THE



A HULETT UNLOADER WITH ITS JAWS ABOUT TO OPEN FOR A 12-TON BITE OF IRON ORE. THE OPERATOR GOES WITH HIS MACHINE INTO THE HOLD OF THE SHIP FOR A LOAD

IS A GREAT STRUCTURE OF CONCRETE AND STEEL, RISING MORE THAN 75 FEET ABOVE THE WATER. VESSEL LYING ALONGSIDE IS NEARLY 600 FEET IN LENGTH

VESSEL IN HARBOR OF CONNEAUT, OHIO, LYING AT DOCK WHICH HAS MADE THE WORLD'S RECORD FOR UNLOADING OF IRON ORE—10,636 GROSS, OR 11,912 NET, TONS IN TWO HOURS AND FIFTY MINUTES

GENERAL VIEW IN THE HARBOR OF ASHTABULA, OHIO. IN 1910 THERE WERE RECEIVED IN THIS HARBOR 9,620,638 GROSS, OR 10,775,114 NET, TONS OF IRON ORE

for loading on September 8, 1911, when 9,457 gross (10,592 net) tons of ore were put into the steamer *W. E. Corey* in twenty-five minutes. While special preparations were made in this case for the edification of a party of U. S. Steel Corporation officers, it shows what can be done.

Ships have changed as much, or more, than docks and freight rates, for instead of a few little wooden schooners there is a great fleet of huge steel steamers. The largest of the lot, the *Col. J. M. Schoonmaker* and the *Wm. P. Snyder, Jr.*, are each 617 feet long, 64 feet wide and have a capacity of 14,000 tons. They are said to be the largest bulk freighters in the world.

Ashtabula and Conneaut, Ohio, receive more iron ore than any other ports on the Lakes, and it is nip and tuck as to which gets the most. In 1911 Conneaut got 6,931,278 tons and Ashtabula 6,359,131. Up to October first of this year, Conneaut had received 6,209,000 tons and Ashtabula 6,100,582.

Both towns claim to do some lively unloading, too. Ashtabula tells of the day when the steamer *Shenango* reached port at 3 A. M. with 11,000 gross (12,320 net) tons of ore in her hold, had it taken out, was shifted to another dock, and left port at 9 o'clock the same evening, carrying 12,000 tons of coal.

Then Conneaut speaks up and declares that she holds the world's record for rapid unloading and proceeds to give the details. On August 8, 1912, the steamer *P. A. B. Widener* came alongside the dock with 10,636 gross (11,912 net) tons of ore in her hold. Two hours and fifty minutes later every ton of it had been taken out and put into cars for shipment to Pittsburgh furnaces.

One of the illustrations shows a Hulett unloader just starting through a hatchway and another shows it down in the hold with its huge jaws about to open and take a bite of ore. One of these machines, electrically operated, took 2,093 net tons of ore out of the *Widener* on the occasion named. That means that the huge machine reached out over the ship, dived down into the hold, grabbed twelve tons of ore, lifted it out, backed up, and dropped its load into a waiting freight car once every minute for two hours and fifty minutes without a stop.

And that's how they handle iron ore on the Great Lakes.

THE ATLANTIC COASTAL PROJECT

By JOSEPH HAMPTON MOORE, *M. C.*

CONGRESSMAN MOORE belongs to the rather exclusive order of "doers of things" rather than to the more numerous society of "dreamers of things." He has been President of the Atlantic Deeper Waterways Association since 1907, and is a Director of the National Rivers and Harbors Congress. In this article Mr. Moore draws the conclusion that, both from the dollars and cents standpoint and considerations of humanity, there should be an inland waterway the whole length of the Atlantic Coast.

THE Atlantic Deeper Waterways Association contemplates a continuous line of inland waterways along the Atlantic Coast, from New England to Florida. Along this whole 1800 miles of coast are bays, sounds, ponds and rivers, sheltered from the sea and awaiting only the pick and the shovel to connect them up into one great course from Canada to the Gulf. But because we have not applied the pick and the shovel, but for at least two hundred years have "discussed" the building of such an intra-coastal watercourse, we have lost more in life and property than the Government has spent all told in harbor improvements upon the Atlantic side of our wonderful country.

© *Harris & Ewing*

Recent statistics prepared under the authority of the Atlantic Deeper Waterways Association relating to the whole Atlantic seaboard show that in the single decade between 1900 and 1910 there were over 5,700 disasters to vessels plying their trade along the Atlantic Coast. And what have been the losses resultant from those 5,700 disasters? In property value the loss was in excess of $40,000,000. That wreckage was common loss, but there was a more serious loss. In addition to the $40,000,000, more than 2200 lives were lost in those disasters. Most of those lives would have been spared if those vessels and that commerce had been able to take the inside passage rather than assume the risk of fog and storm in the open sea.

What then is this project? This linking up of the waters of the Puritan with that of the Cavalier, to the end that the loss of lives and property may be reduced to the minimum and the marine graveyards become but a memory to those "who follow the sea in ships"?

Commencing with the channel across Cape Cod (a cut of eight miles), boats, coursing through beautiful hill land, will be saved the risk and danger and possible loss resultant from a course of 148 miles from Boston south around Cape Cod. Then it is proposed to build a canal from the lower end of Long Island Sound to the safe and ample waters of the Delaware.

A cut of 33 miles, across the State of New Jersey, for which that State will provide a right of way, will link up Boston and New York with Philadelphia and Baltimore and save an outside sailing distance from New York south, of 184 miles. Thus would be avoided the shoals of Barnegat. A cut of less than 14 miles across the peninsula of Maryland and Delaware will carry the waters of the Delaware River into Chesapeake Bay and save an outside sailing distance from Philadelphia to Baltimore of 325 miles. And a further improvement, to complete a 48-mile course from Norfolk south, will save an outside sailing distance of 90 miles and avoid the dangers of Cape Hatteras. In short, the improvement of existing canals, or such digging as may be necessary in solid cuts and dredging of about 100 miles, will save the outside risk and sailing distance of 740 miles and carry the products of the "rock-bound coast" of New England inland by water safe below Cape Hatteras.

THE WRECK OF THE *TORONTO*
(OFF CAPE COD)

During the decade ended with 1910 there were 5,700 disasters to vessels along the Atlantic Coast, involving a loss of $40,000,000 and the sacrifice of over 2200 lives. Those lives would have been saved if those vessels and that commerce had been able to take the proposed inside passage, instead of assuming the risk of fog and storm in the open sea.

The Hudson River, too, is one of the arms of the Atlantic project which, with the completion of the enlarged Erie Canal, must hold the key to the trade of Canada and the Great Lakes.

It may be a long time before the peninsula of Florida is canalized and a thousand miles, approximately, saved to vessels doing business with Gulf ports, but that vast project is contemplated by our Southern friends as a continuing link of the Atlantic project, to the end that the inland waters along the Gulf, from the Atlantic to the Mississippi, may be brought together into one common scheme of inland water passage.

The feasibility of an intra-coastal canal from New England to Florida is admitted by the U. S. Army Engineers, and its desirability is known to every business man who has recourse to the sea for his transportation between New England and ports of the South.

So important and extensive in its ramifications is this project of building an inland waterway between New England and Florida, that it seems imperatively necessary that I touch upon one or two questions intimately related with the subject.

East of the Appalachian chain we have now a population of 37,000,000, which is more than one-third of the total population. In that area we have only 23 per cent. of the railroad mileage of the United States. With our waterways neglected and bottled up, we are compelled to do more business with fewer railroads than any other section of the country. We must have more railroads or more waterways, or both. That the Government does not give us consideration in proportion to our population and commerce is shown in the appropriations made for rivers and harbors. Up until 1907, we received approximately $141,000,000, or about one-quarter of the total appropriations made by the Government to that time. Since 1907, and until the passage of the Rivers and Harbors bill of 1912, the apportionment of appropriations, according to an estimate of the National Rivers and Harbors Congress, was $19,000,000 for the PacificCoast, $50,000,000 for the Atlantic Coast and $110,000,000

for the Mississippi Valley. So that during the five years prior to 1912, while we advanced slightly in the matter of proportions, the Atlantic seaboard, with its great ports of Portland, Boston, Providence, New York, Philadelphia, Baltimore, Norfolk, Savannah and Jacksonville, received less than one-half the sum awarded the Middle West, the Lakes and the Gulf.

For our population of 37,000,000 the value of our manufactured products is $11,000,000,000, and to this we should add a value of $4,700,000,000, created by manufactures of products. Our exports aggregate $1,000,000,000 and our imports $1,200,000,000. I do not claim the exports and imports so enormously developed as exclusively belonging to the Atlantic seaboard, but I think it will not be controverted that while they may arise in all parts of the country, or in all parts of the world, they concentrate along the Atlantic seaboard and present to us the tremendous problem of transportation and shipment, which must necessarily be acute at approaches to ports of entry.

And in this particular I lay special emphasis upon the fact that while along the Atlantic Coast we have only 36 per cent. of the water-borne domestic freight of the country, we do all our great business in the old Colonial area, with all sections of the country and all parts of the world, upon only 23 per cent. (or less than one-quarter) of the total railroad mileage of the United States, which in itself would seem to warrant the speedy building of the links, which give abundant promise to make a mighty chain of inland waterways from Maine to the Florida Keys.

Humanity, as well as commerce, demands that this intra-coastal waterway be constructed with despatch and we are hopefully looking forward to the appropriation by Congress of a sum sufficient to purchase the canal between the Delaware River and Chesapeake Bay as the third link in the connected chain, the "Beaufort Cut" having been completed and the Rivers and Harbors Act of 1912 having provided for the taking over and improvement of the Chesapeake and Albemarle Canal in accordance with the recommendations of the engineers and in harmony with the whole coastal project.

We complain of the decadence of the

PORT OF PHILADELPHIA

STEAMER LADEN WITH IRON ORE, INWARD BOUND

ON THE INLAND WATERWAY NEAR BEAUFORT, N. C.

American merchant marine; we know that the sailing craft is disappearing from the high seas; we are fully conscious of the absorption of the ocean-going trade by the Titanics and the Mauretanias, of foreign ownership; we realize that more than 90 per cent. of the business of the United States is home business, and that our railroads, while superior to those of Europe, are limited in their carrying capacity and crowded with business, with prospects of more to come, and yet, for the lack of appropriations, or our indifference to securing them, we are compelled to listen to the constantly recurring recital of death and disaster, which ought to have been avoided.

The Association which I have the honor to represent cannot afford to be silent upon this question, nor will it be, so long as other sections of the country, not blessed with the industry or the commerce of the Atlantic Coast, are permitted to take away the common revenue for insignificant rivers and ports of less importance. It is not sufficient that we have been robbed of our merchant marine, or that our sailing craft are being pushed into oblivion, or that our coastwise steamers are submitted to unnecessary risk and delays. "The old order changeth," and as the sailing craft have gone and the coastwise steamer has been absorbed, the burden-carrying barge and the swift-moving motorboat have come into our commercial life, and are now also demanding those safe and sheltered waterways which God evidently intended should be opened up for the use of man along the Atlantic Coast.

SPEEDY MOTOR CRAFT
REGATTA

RED BANK, NEW JERSEY
1912

Courtesy "Motor Boating"

Wherever the motor boat is offered a safe passage-way, land values boom, for through this means of quick transit the city is within easy reach of the home down by the shore or over by the river. The proposed Atlantic intracoastal waterway would be ideal for the speed boat and cruiser.

THE PANAMA-PACIFIC EXPOSITION

By JULIUS KAHN, *M. C.*

THE great international Panama Exposition, to be held at San Francisco in 1915, will soon occupy the center of the stage, and no one is better fitted to tell of the plans for this wonderfully dramatic event than Julius Kahn, who enjoys the unusual distinction of having made a splendid reputation as a wearer of the "sock and buskin" before entering politics. He is a brilliant speaker and writer, and this article will grip your imagination from the start.

THROUGHOUT the Pacific Coast our people are looking forward to the opening of the Panama Canal as they have looked forward toward no other event. To each one the opening of the canal has an intense and almost personal significance. It makes possible the ultimate attainment of every ideal which is held for the future of the magnificent empire upon the western shores of America.

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So it is that the communities of the Pacific Coast are preparing for the advent of the Panama-Pacific International Exposition and of all the completion of the canal will bring, with an enthusiasm which is marked by an individual and personal note, as well as by the natural feeling of patriotism which each good American must experience at the contemplation of the stupendous work which our Government has accomplished.

"The Panama Canal is the world's Golden Gate to the Pacific," said Secretary Knox in San Francisco upon his return from the Caribbean Sea. The Panama-Pacific Exposition will express every hope that the West feels at Panama. With the canal completed, America will have a practically continuous coast line from Maine, upon the Atlantic seaboard, to the Golden Gate and Puget Sound upon the Pacific. For the first time, the Pacific coast of South and Central America, of Mexico, and of North America will be opened by direct route to the European nations. At present there is but one line of steamers that regularly reaches the Pacific coast of South America from Europe via Cape Horn, and but a single line runs between the Orient and South America across the Pacific.

In this connection I am speaking of established routes. But all this will be changed. The Pacific Coast will be placed upon the highway of the world's travel. Steamers will, if they travel from Panama to the Orient by the Great Circle, the shortest route, pass within one hundred

SERVICE BUILDING—THE FIRST TO BE ERECTED

FESTIVAL HALL, DESIGNED BY FARQUHAR

GENERAL VIEW OF SITE OF PANAMA-PACIFIC EXPOSITION

and sixty miles of the Golden Gate. To the average mind, accustomed to seeing a printed map, a flat map of the world drawn to scale, showing the Great Circle, will illustrate this point. The rotundity of the globe makes traveling upon the Great Circle the shortest distance between two points, although upon an ordinary map it will seem the longer distance. A steamer from Colon to Yokohama would almost parallel the coast of California and none would be but a few miles off the coast.

Up and down the entire Pacific seaboard millions are being expended upon wharves, terminals and short inland lines to serve as feeders to ocean traffic. Cargoes from the Mississippi, Missouri and Ohio River valleys may go by water freightage to the Orient, and the opening of the canal has an immediate and direct interest to the producers of great interior sections of the country who will be enabled to send their goods cheaply throughout the world on the new route of world's traffic. The rivers that lead to the ocean become like smaller streets that lead to the great main highway.

The world commerce that will result when a goodly part of the total carrying trade of the world is saved thousands of miles of sea voyage is almost beyond conjecture. A thousand commercial avenues will be opened to producers who have never met, and the Panama-Pacific International Exposition will afford the meeting place for those who plan to take advantage of the new world's markets.

Not long ago the good old battleship "Oregon," drawing twenty-eight feet of water when under way, visited the city of Portland, one hundred miles inland, but a seaport for all that. Whenever you find a city which can be visited by a battleship drawing twenty-eight feet of water, you will be very safe in calling it a seaport. The port of Portland maintains a floating dry-dock of ten thousand tons capacity; operates two hydraulic dredgers on the river and has another dredger nearly completed. The Government has spent nine million dollars on the Columbia bar and has just appropriated one million dollars more. It is aimed to have a thirty-foot channel at low tide from Portland to the sea.

Seattle, in preparation for the opening of the canal and for the increased trade which it must care for, is preparing upon a stupendous scale for the building of wharves and terminals, for canals and all that will make that city a great port. More than twenty million dollars, in the opinion of Gen. H. M. Chittenden, will be expended by Seattle in the next five years for harbor improvements. One of the striking features of Seattle's work is the project to connect the salt waters of the Sound with the fresh waters of Lake Union, lying within the city, and the beautiful Lake Washington on one of the city's boundaries.

A canal is being built to connect Lake Washington and Lake Union, lowering the former eight to ten feet to the level of the latter. Another canal will connect Lake Union with the salt waters of Salmon Bay. To force Salmon Bay to the level of Lake Union the Government is now building the second largest lock in this country. This will permit the fresh and salt waters to meet in a great ship-canal floating the

SHOWING FRONTAGE ON SAN FRANCISCO BAY

great liners of the sea and giving them a fresh water anchorage if they so desire.

San Francisco is now the subject of an appropriation of nine million dollars by the State of California for the improvement of its harbor terminal facilities. Concrete wharves and docks are being built through this appropriation, and millions of dollars will be expended by the great steamship syndicates that now make San Francisco one end of their route. The agents of more than twenty syndicates, embracing the notable steamship transportation lines of Europe, have already visited San Francisco, looking toward the establishment of future routes between San Francisco and Europe via the Panama Canal, so that a number of new lines to the metropolis of the Pacific is assured.

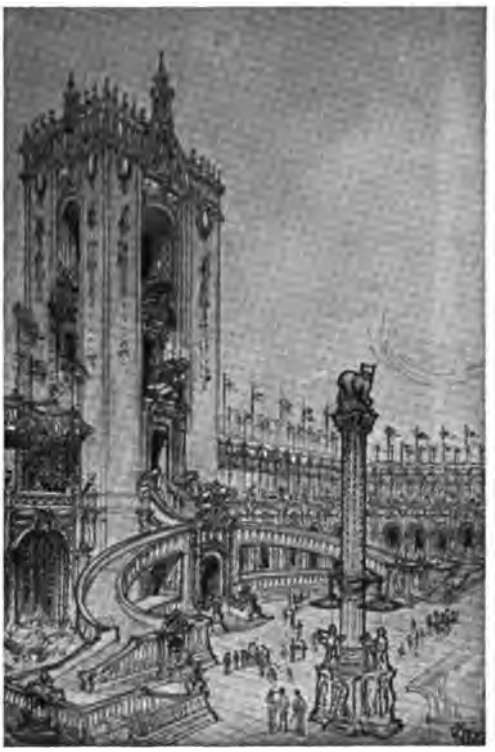
The existing lines between San Francisco and the Orient are planning to improve their freight and passenger carrying facilities. Not only will San Francisco and other Pacific Coast cities profit by increased direct commerce, but they will become ports of trans-shipment. None of the European lines, so far as I have been able to ascertain, contemplates running from Europe to the Orient via Panama, although it is possible that a number may do so. The trip will be too long. The natural line of travel will be from Europe to the Pacific Coast ports via the canal, and from Atlantic Coast ports to the Orient via the canal. There will also be a direct line between Atlantic and Pacific Coast ports via the canal. This will, it will be seen, make the Pacific Coast in large measure the natural point of trans-shipment for cargoes to the Orient from Europe via Panama.

San Diego is undertaking a wonderful dock and waterfront system and planning the expenditure of many millions. Los Angeles, always enterprising, will care for a goodly trade through Panama. Victoria and other Canadian ports are alive to their opportunities, and Victoria has adopted the slogan "The Liverpool of the Pacific."

Thus the cities of the Pacific Coast are betraying a vital interest in the Panama-Pacific International Exposition, at which the people of California, as trustees for the nation, will provide the local setting for the celebration to commemorate America's work and to point out the way for future relationships.

Progress upon the Panama-Pacific International Exposition is far advanced. The scope of the exposition has been determined and the plans of a commission comprised of many of the foremost architects of the United States have been definitely accepted. Construction work on the first great exhibit palace, that of machinery, will begin on or before November 11th of this year, and from then on contracts will be let at the rate of two a month for each of the fourteen great exhibit palaces of the main group to be devoted to general exhibits. Within nine months construction will be under way upon all of the main exhibit buildings, and they will be completed on or before June 25, 1914. This will permit the decoration and adornment of the grounds and buildings with flowering trees and shrubs and with flowers.

The Panama-Pacific International Exposition will be the first of the great world's expositions to swing its gates open upon time on a completed spectacle.



THE TOWER OF THE EAST COURT

from the stairway approach from the sunken gardens. Its balconies will accommodate thousands of spectators and its chimes will surpass those of Westminster Abbey. The main tower with its colossal twin staircases is at the north side of the Festival Court facing the sun. It is a suggestion of Oriental architecture. Designed by Mulgart.

The site of the exposition lies for more than two miles along the shores of San Francisco Bay and is midway between the Ferry building, the principal entrance to the city, and the Golden Gate. The site is close to the most populous portion of San Francisco. From the foot of Van Ness Avenue, two miles west of the Ferry building, the site extends for fifteen thousand feet, almost to Fort Point, upon the Presidio military reservation. As a whole the site, in crescent form, presents the effect of a vast amphitheatre, with the tenanted hills of San Francisco and the forested slopes of the Presidio military reservation as its encircling walls. From the hills of the city, people will be able to look down upon the exposition as it is building. Thousands of men will soon be at work.

The exposition buildings will be the loftiest and most impressive ever constructed. From San Francisco Bay, in 1915, the visitor will see three great main groups of exposition palaces rising against the amphitheatre of the hills. There will be the great central group, comprising the eight exposition buildings to be devoted to general exhibits, their northern walls facing upon the Marina or esplanade by the harbor's edge for three thousand feet and rising sixty-five feet in height.

There will be the great left-hand group, nearest the Ferry building, composed of the concessions and amusements and occupying sixty-five acres, and there will be the right-hand group lying next to the Golden Gate on the west composed of the exhibits and buildings of the states nearest the water, with the pavilions of the foreign governments rising tier upon tier in terraces in the background.

The great central group, with the adjoining Palace of Fine Arts on the west and the Palace of Machinery upon the east, will extend four-fifths of a mile east and west. Its towers, exclusive of the main tower in the Court of Honor, will rise one hundred and thirty to one hundred and seventy-five feet in height. The domes in the center of the exhibit palaces will tower one hundred and forty-four feet.

From the bay the sky line of the exhibit palaces, apart from their domes and towers and minarets, will be ninety-six feet in height, or thirty-one feet higher than the imposing walls that face the splendid esplanade along the harbor's edge.

From afar the central group, the main exhibit palaces, facing three thousand feet upon San Francisco harbor, will present the effect of an almost solid massing of palatial structures. Nearer at hand it will be found that the buildings are interspersed with great open courts extending from the tropical garden upon the south, nearest the hills of the city, to the esplanade along the harbor's edge upon the north.

Three great courts will run north and south through the main group of buildings. There will be the great central court, or the grand Court of Honor, designed by McKim, Mead & White of New York, and six hundred by nine hundred feet in its dimensions; there will be the great

FRONT ELEVATION OF THE FINE ARTS BUILDING, DESIGNED BY MAYBECK

Oriental or East Court dedicated to the arts, and there will be the great West Court or Court of Four Seasons. In the center of the main group will rise the huge tower of the Administration Building, three hundred and seventy feet high and flanked on either side by the gilded domes, towers and minarets of the remaining buildings of the group. At the base of the tower, which will occupy an acre in extent, will be a huge arcade beneath which the visitor may enter from the Southern garden into the grand Court of Honor. In its center the court will contain a sunken garden, and at the entrance to the Court of Honor, between the Agricultural and Transportation Buildings, will lie a pool of water upon whose surface the great tower will be reflected.

The grouping of huge buildings will give the effect of almost inconceivable massiveness and grandeur. A decorative and color scheme, totally unlike that ever employed in any exposition in history, will produce an artistic effect never surpassed. Each court will be under the direction of a single architect or group of architects, and each will thus give out the finest conception of the architect. Yet in their entirety the courts, like inner rooms of a great palace, will not clash nor produce a lack of harmony in the architectural effect.

The Panama-Pacific International Exposition will express in its architecture and conception the spirit of progress and achievement which has found amplification in the construction of the Panama Canal, the American wonder-work which has gripped the interest of the nations of the world, who will participate in the exposition upon a splendid scale. But above and beyond all material features is the spirit which the exposition typifies—the spirit of achievement, of progress and of education.

SECTION OF THE COURT OF SEASONS, DESIGNED BY BACON

THE MIGHTY RIVER OF THE WEST

By J. N. TEAL

MR. TEAL, who is a prominent attorney of Portland, Oregon, represents before the Nation the interests of the Pacific Northwest in many capacities, and stands preeminently high as an advocate of waterway development. His special interest is, of course, in his own section and he writes with a knowledge born of close association with the Columbia River and the wonderful valley it drains. He also talks interestingly of Willamette and Snake Rivers.

THE Columbia River, the second largest river in the United States, forms the boundary line for a considerable distance of the States of Oregon and Washington. It has a length of about 1200 miles and a drainage area of 250,000 square miles.

The Willamette River enters the Columbia River 102 miles from the sea and the Snake River 328 miles from the sea. The Columbia and Snake Rivers, with their tributaries, drain the great Inland Empire, from British Columbia on the north, and the Rocky Mountains on the east. The Willamette River drains the valley lying between the Coast Range and Cascade Mountains in western Oregon.

The Columbia River is not only one of the chief harbors of the coast, but is a waterway important to the States of Oregon, Washington and Idaho, and to a considerable portion of southwestern British Columbia. The total navigable waters of the Columbia River and its tributaries aggregate 2136 miles.

The region drained by the Columbia River and its tributaries includes the rich and productive sections of the States of Oregon, Washington and Idaho, lying east of the Cascade Mountains. It is now producing about 90,000,000 bushels of wheat and other cereals per annum, thousands of car-loads of fruit, hay and vegetables, live stock, precious metals, in fact, natural products of all kinds. Yet its development is but in its infancy.

This great river and its tributaries should be the burden bearer of the products of this vast empire. It should not only control rates, but be an instrument in constant use in the actual work of transportation. While improved to but a limited extent, its use has had a profound effect on freight rates.

Before the completion of the canal and locks at the Cascades of the Columbia, the freight rate on sugar, Portland to The Dalles, was $6.20 per ton; now it is $1.90 per ton. Rates on other commodities were affected in a like degree. This is of course a much greater difference than would ordinarily result from unobstructed water transportation, but of its effect on rates generally when used, there can be no doubt.

Notwithstanding the difficulties of operation by reason of transfers, etc., on the upper Columbia, the Open River Transportation Company has for a number of years been operated as an independent boat line running steamboats between Portland and Lewiston on Snake River and Priest Rapids in the Columbia. Through the operation of this line (notwithstanding the very adverse conditions) not only important rate reductions have been secured but improved rail service as well. Last year nearly 2,000,000 pounds of wool was transported by this line from points as far up the river as Lewiston and even above that point to Portland and thence by sea to Boston at much lower rates than the rates by rail.

The grandeur of the Columbia River and its awe-inspiring scenery has been the inspiration of the poet and descriptive writer. The fertility of the country drained by it would fill volumes, but its use as a transportation agency has been largely overlooked by the writers in their admiration of its charms and beauty. The

great river itself, the snowclad mountain peaks, the wild Gorge of the Columbia, the waterfalls dashing from mountain heights, the stately palisades, the great forests, so impress one, the practical side is apt to be overlooked.

The rivers of the West are in constant use and, properly improved, will be of inestimable public benefit. Even now, and as has been the case for years, steamboats ply the waters of the Columbia and Willamette in every direction and this fleet handles in the aggregate an enormous tonnage. Between Portland and the sea there is a constant procession of deep sea ships flying the flag of every nation. Portland is the largest lumber and wheat shipping port in the United States. It has commercial relations with every nation under the sun. The coast tonnage, to and from Portland, is very great, and its people appreciate the importance of the use of water as a transportation agency. Portland has spent millions of dollars, raised by taxation, in the work of improving the river between that city and the sea, and this work is in constant progress. It maintains a dry dock, pilotage and towage service both at the mouth of and on the river from Portland to Astoria by the sea. It is also constructing and establishing a municipal dock and terminal system of the most modern type. The Columbia River might be said to be one great harbor through which a great part of the tonnage of the Inland Empire will naturally flow, on or along the water grades from far-away British Columbia, on its way to the markets of the world.

THE COLUMBIA RIVER JETTY

THIS MIGHTY STREAM OF THE PACIFIC NORTHWEST IS THE SECOND LARGEST OF OUR RIVERS. IT IS 1200 MILES LONG AND HAS A DRAINAGE AREA OF OVER 250,000 SQUARE MILES

In this work of distribution—of such vital interest to the producers of the Northwest—the mighty river of the West, the Columbia of song and story, will necessarily play a momentous part. The following is a brief statement of improvements now in progress on the Columbia River and its tributaries.

In April, 1885, the construction of a jetty on the south side of the entrance to the Columbia River began. The south jetty is now practically completed and the low water channel depth has increased from 21 to 28 feet. Plans have been approved for the construction of a jetty on the north side of river entrance, which will create a depth of 40 feet at mean low tide.

On the Oregon shore of the Columbia, about 14 miles from the sea, is situated the historic city of Astoria, of 15,000 population and one of the oldest cities on the coast. Astoria has a fine harbor and is making plans for extensive waterfront improvements.

From the mouth of the Columbia to the Willamette River, a distance of 102 miles, the river is wide and deep, with only a few shoals. Vessels drawing 28 feet of water have no difficulty in reaching Portland

even at low-water stages. Ocean navigation turns into the Willamette River to reach Portland, Oregon, which is situated on the Willamette River about 12 miles above its mouth, and occupies both banks. The work of improvement of the Columbia and Willamette Rivers below Portland has been done partly by the United States and partly by local interests working under a corporation known as the Port of Portland and on funds secured by taxation of property situated within the limits of the port.

Above Portland the Willamette River, which drains the rich valley of the same name, is navigable for light-draft river boats for a distance of about 120 miles. At Oregon City, about 16 miles above Portland, are the Willamette Falls. This obstruction is overcome by locks. Throughout the Willamette Valley are a number of thriving cities, including Salem, the capital of the State.

Continuing up the Columbia River from the mouth of the Willamette, the river is navigable for ocean-going vessels to Vancouver, Washington, a city of 10,000 inhabitants, on the north bank of the Columbia River about 106 miles from the sea.

Above Vancouver the river is navigable for river steamers to Cascade Locks, a distance of 140 miles from the sea. At this point the river is obstructed by the Cascades of the Columbia. The obstruction is overcome by a short canal with two locks. Above the Cascades for nearly 50 miles the river has a small fall and little current. River steamers with a draft of 8 feet can navigate this pool at the lowest stage to the foot of The Dalles Rapids, to the City of The Dalles with a population of about 5,000, 196 miles from the sea. Here for a distance of about 12 miles the river is not navigable on account of rapids and falls. A canal 8½ miles in length is being constructed by the United States along the Oregon shore. Above the Celilo Falls the river for a distance of several hundred miles has a navigable low-water depth of about 4 feet. The only improvement in progress is that of removing the most dangerous rocks in the channels.

Navigation above Celilo Falls is now limited to the stretch below Priest Rapids, on the Columbia, a distance of about 170 miles, and to Lewiston on the Snake River. From Priest Rapids to the headwaters of the Columbia in British Columbia, there are long navigable stretches separated by rapids. Some of the rapids are navigable at favorable stages and at a few rapids locks will be required. Steps are being taken both in the United States and British Columbia, looking to the cooperation of local interests with the Government of the United States in a plan for the improvement of the river from its headwaters in British Columbia to the Pacific Ocean.

The Snake River enters the Columbia 314 miles above the sea, and is now navigable to the City of Lewiston, Idaho, situated in the center of a rich farming section, a distance of about 165 miles above its mouth. The proper improvement of these rivers taken in connection with power development and irrigation possibilities will make this entire section one of the most attractive and productive territories in the United States.

THE GRANDEUR OF THE COLUMBIA RIVER SCENERY IS UNSURPASSED

IMMINGHAM DOCKS CELEBRATION

Scene at the recent opening of England's splendid new port by the King and Queen. The picture shows Their Majesties approaching the dais erected in their honor. The smaller pictures are a group of a few of the tremendous two-ton cranes that form part of the facilities of this wonderful port, and the battery of nine immense boilers, each operating under a pressure of 180 pounds necessary for power.

© *Paul Thompson, N. Y.*

NATIONAL RIVERS AND HARBORS CONGRESS

By JOSEPH EUGENE RANSDELL, *LL. D.*

SENATOR-ELECT RANSDELL, who enters the upper branch of Congress March 4, 1913, having lived on the Father of Waters from early manhood, has taken the liveliest possible interest in the development of every worthy waterway project. Mr. Ransdell has been a forceful figure in public life since his election to the House in 1899, and is a member of the Committee on Rivers and Harbors. Mr. Ransdell tells of the origin and growth of the National Rivers and Harbors Congress, but he fails to tell how much of the power and influence of that association is due to the energy, devotion and genius for organization of the man who has been its president since 1906.

ON March 3 and 4, 1901, the late Senator Thomas H. Carter, of Montana, talked to death a Rivers and Harbors Bill which carried appropriations for waterways aggregating fifty-six millions. His professed excuse was that the House conferees refused to agree to a Senate amendment appropriating sundry sums for irrigating lands in arid sections of Montana where, as Chairman Burton expressed it, "there were no streams deep enough to float a birch-bark canoe." Rumor gave other reasons for the defeat of this bill, but at any rate it was killed and a grievous blow struck at river and harbor legislation. Then the friends of the cause throughout the land began to rally and unite their forces.

One of the most important projects in the defunct bill was for a channel of 35 feet through the South West Pass of the Mississippi River, and its special advocates before the committees of Congress were M. J. Sanders and John W. Bryant of New Orleans. These two gentlemen felt their defeat very keenly, and immediately laid plans for arousing public indignation against Senator Carter's action and sentiment in favor of a liberal bill next session.

The result of their efforts was a great waterways convention which opened in Baltimore, Md., on October 8, 1901. Mr. Geo. E. Bartol of Philadelphia was made permanent president. Many delegates attended from various sections. The organization was christened *The National Rivers and Harbors Congress*. The utmost harmony prevailed. Resolutions denouncing the past policy of Congress towards waterways and insisting upon more liberal treatment thereafter were passed unanimously. The press gave great prominence to the proceedings, and the whole Union was aroused as never before in fifty years in regard to waterways. An executive committee was appointed to carry on the work outlined in the convention and to perpetuate the organization, but it existed only in name, never held a meeting, and performed no functions for four years.

The good effects of the Baltimore convention were felt in the next session of Congress which, in the spring of 1902, passed a river and harbor bill carrying $65,107,102—the largest ever enacted to that date—and waterway people were in high feather. Then came the depressing years 1903 and 1904 without any general legislation for waterways, and in 1905 a bill was passed appropriating only $35,366,532—but little more than half that of 1902, although the nation was growing rapidly and demands for waterway improvements were increasing in proportion. The act of 1905 was a bitter disappointment, and the amounts it carried were totally inadequate to the country's needs.

In June, 1905, the Ohio Valley Improvement Association, under the lead of its great president, Col. John L. Vance, took the Rivers and Harbors Committee of the House of Representatives on a tour of the Ohio from Pittsburgh to Cairo to impress on them the importance of giving that river slack water navigation of nine feet from one end to the other, by means of locks and dams, at a cost of sixty-three millions. That was a glorious trip, a grand triumphal march of a thousand miles down the great stream, through

JOHN W. BRYANT
PROMINENT IN THE EARLY HISTORY OF THE NAT'L R. & H. CONGRESS

M. J. SANDERS
PROMINENT IN THE EARLY HISTORY OF THE NAT'L R. & H. CONGRESS

JOS. E. RANSDELL
U. S. SENATOR-ELECT
President National Rivers and Harbors Congress since 1906

GEORGE E. BARTOL
FIRST PRESIDENT NATIONAL RIVERS AND HARBORS CONGRESS

HARVEY T. GOULDER
SECOND PRESIDENT NATIONAL RIVERS AND HARBORS CONGRESS

The two ladies shown in this group are, to the right, Mrs. Hoyle Tomkies, first President, and, to the left, Mrs. A. Barton Miller, present head of the Woman's National Rivers and Harbors Congress

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74 Nisbet Wingfield, *Georgia*
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76 Edward H. Droop, *District of Columbia*
77 William H. Head, *Delaware*
78 Oliver Gildersleeve, *Connecticut*
79 Brooks Irione, *Colorado*
80 Chas. Von Behren, *Indiana*
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83 E. F. Noel, *Mississippi*
84 Harry A. Tuttle, *Minnesota*
85 E. A. Stowe, *Michigan*
86 John J. Martin, *Massachusetts*
87 Dr. David H. Carroll, *Maryland*
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113 F. W. Crandall, *Travelers' Protective Ass'n*
114 Chas. B. Griffith, *United Commercial Travelers of America*
115 Wm. Geo. Bruce, *Wisconsin*

the most populous and wealthy valley of equal length in all the world. No warrior of ancient days returning from foreign conquest was ever accorded more hearty welcome, more distinguished honors and more lavish hospitality than Chairman Burton and the members of his committee on that historic voyage of the "Queen City" from Pittsburgh to Cairo. On all sides nothing was heard but "nine feet from Pittsburgh to Cairo." Thousands of school children in every city and village on the river greeted the committee with banners, music, and national airs.

The very birds sang "nine feet from Pittsburgh to Cairo;" the winds whistled it; the bands played it; the orators declaimed it; indeed, all nature in the great Ohio Valley, with its millions of souls and myriads of wealth, demanded nine feet of water at all stages from Pittsburgh to Cairo.

At Cincinnati a banquet was spread and many addresses graced the occasion. The writer, who was one of the speakers, suggested the wisdom of all friends of waterways uniting in a great national organization for promoting their cause, and urged the immediate formation of such a body. The idea took enthusiastically and was acted upon at once by the officers of the Ohio Valley Improvement Association. The visiting members of Congress held a meeting on the steamer next day, and gave their hearty approval. A conference of delegates from several waterway associations met shortly thereafter in Cincinnati, and it was decided to ask the executive committee appointed by the Baltimore convention to issue a call for a national waterways convention to be held in Washington the following January. That was done and a meeting of two hundred and fifty delegates, fairly representative of the nation, convened in the Arlington Hotel on January 15, 1906. It made up in enthusiasm what it lacked in numbers. A vigorous program was set on foot to arouse public opinion in favor of a liberal, comprehensive policy for improving every worthy watercourse in the Republic justified by the needs of commerce. No *waterway projects* were advocated, but a *genuine, business-like, waterway policy*. The total inadequacy of appropriations for rivers and harbors, which then averaged less than twenty millions a year, was strongly emphasized, and Congress was urged to raise this sum to at least fifty millions a year. It was pointed out that river and harbor bills were enacted every third year, whereas the other great appropriation bills were passed every year, and a loud cry was made *for annual river and harbor bills.*

The slogan of the organization became: "*A policy, not a project—An annual Rivers and Harbors bill carrying fifty millions a year.*" And that slogan has been the pole star which ever guided and directed its efforts, and has kept it from breaking on the dangerous shoals of conflicting local interests.

Hon. Harvey T. Goulder of Cleveland, Ohio, was elected President of this convention and it was decided to retain the name adopted at Baltimore five years before. A strong executive committee was created, with plenary power to carry out the plans of the organization, and its efforts were untiring. The writer was made chairman of this committee and J. F. Ellison, of Cincinnati, its secretary-treasurer and active manager. Never was a wiser selection made than the latter. When Captain Ellison took the helm in January, 1906, the organization existed only in name; it had no exchequer; it had no contributing members; it had nothing but a good cause and some ringing resolutions. He went to work with great energy, assisted somewhat by the chairman, and soon found a helper worthy of himself in John A. Fox, who has proved a veritable St. Paul of waterways, preaching their gospel in every corner of the Union.

The next convention was held at the Arlington in December, 1906, and was a decided improvement on the last in numbers, enthusiasm and general force. It reiterated the policy of the previous meeting, and arranged to finance the association and carry on an aggressive campaign of education. The writer was made president and ex-officio chairman of the executive committee, which position he still holds. Ellison retained his position, and Fox became field director, which places they filled with increasing honor to themselves and the greatest benefit to the organization until they resigned recently to accept flattering business offers elsewhere.

No truer and more efficient friends of American waterways ever lived than

Frank Ellison and John Fox. The writer was associated intimately with them from the early days, when our souls were often sorely tried, and it is a great pleasure to pay this merited tribute to their worth.

Since December, 1906, conventions have been held every year in this city at the Willard Hotel during the first week of December. The organization has grown in numbers and influence until it reaches every State, and is a recognized power in the land. Its membership includes nearly every waterway association, a great many boards of trade and commercial bodies, and a large number of individuals. One of its most honored associates is the Woman's National Rivers and Harbors Congress, which organized in June, 1908, with Mrs. Hoyle Tomkies, of Louisiana, as first president and leading spirit. Its present head is Mrs. Clara Barton Miller of South Carolina. The aims and purposes of this association are substantially the same as that of the men's Congress and they work together in the utmost harmony.

The last convention held sessions for three days—December 6, 7, 8, 1911- and it was a great success in every way, though somewhat marred by the resignations of Ellison and Fox. We were fortunate to secure for Captain Ellison's successor as secretary-treasurer Mr. S. A. Thompson, of Indiana, who for several years was connected with the Congress as assistant field director. Mr. Thompson was known twenty-five years ago as "Deep Water Thompson" because of his splendid efforts for improvement of the Lakes. He is a forceful writer and an orator of great power.

These conventions have been addressed by the leading men of the United States and other lands, and their proceedings constitute a set of valuable works on waterways and transportation generally. The ambassadors of France, Germany, Mexico, Brazil, and Great Britain, have told us what their countries were doing to utilize the water--*nature's best and cheapest agent of transportation*; presidents of great railroads have discussed the relative merits of water and rail; eminent engineers have talked about mighty waterway engineering feats at home and abroad --especially the famous canal system of our Canadian cousins and our own mighty canal across the Isthmus; presidents of many local water-associations, our honored associates and colaborers, have explained the merits of their respective projects; and many of the nation's brightest minds have enlightened us on subjects more or less related to the use of water as an agent of transportation. A publicity bureau has been maintained in this city for three years under the able management of a veteran newspaper man, Mr. Edgar C. Snyder, and the best thought of our nation's statesmen, publicists and prominent men relating to waterways and kindred topics is disseminated daily and weekly through the press.

The National Rivers and Harbors Congress, as its name indicates, is truly national in purpose and effort. It has never advocated special projects no matter how colossal or meritorious they were, but always endeavored to bring about a generous, far-reaching policy that might promptly provide sufficient funds for the improvement of all worthy waterways, many of which are shown on the accompanying map. Its aim is to create general waterway sentiment; to make the country understand and appreciate the cheapness of water transportation as compared with rail, and the vast savings in freight charges resulting from well-improved and utilized waterways; and to assist in the passage of proper laws to regulate traffic by rail and water.

Since its reorganization in January, 1906, vast improvement has occurred in waterway sentiment and legislation. At that time and for several years prior thereto, river and harbor bills were enacted every three years; now they are annual, the same as other great appropriation bills. At that time the average annual appropriations for rivers and harbors were about twenty millions a year. For the past three years they have averaged over thirty millions a year, and waterway appropriations in the bill of the current year exceed forty millions. *Thus we see a change in six years from triennial to annual bills, and from less than twenty millions to over forty millions a year.*

Moreover, there is a decidedly better sentiment towards waterways than heretofore. It is conceded that they have rights which must be recognized and protected, and a system of laws is growing up

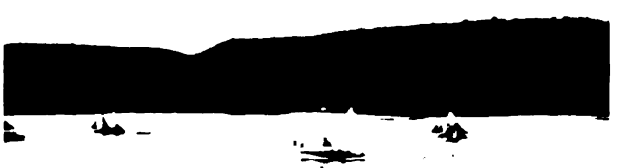
to define and enforce them. Many communities are becoming aroused to the necessity of providing suitable water terminals, which in the vast majority of cases at the present time are owned and controlled by railways or private corporations. *They should be public property for public use.*

A notable result of the increased liberality in waterway appropriations is that a number of meritorious projects have been undertaken in a systematic manner, and are being pushed rapidly. Definite periods ranging from five to twelve years have been fixed for completing several of the more important projects, the length of time being determined largely by the rapidity with which the work can be advantageously carried on. Under this new and wise dispensation, projects will be finished in the near future which had been delayed so long under the old-time methods that everyone had lost confidence in them.

The organization has taken deep interest in legislation relating to the Panama Canal, regarding it as the greatest artificial water improvement ever undertaken by man and of supreme importance to the welfare of all Americans who go down to the sea in ships. It wishes to see this great canal so safeguarded by wise laws that rival agents of transportation may not be enabled to reap the benefits which the citizens of the Union are entitled to receive from the free water competition of this connecting link between the oceans.

Let it be distinctly understood, however, that the Congress is not opposed to railways. Its earnest desire is that rail and water shall cooperate in every proper way so as to give the cheapest and best transportation. It believes that railways and waterways are the natural complements one of the other, and while it wishes to do its utmost to secure all laws for improving every worthy watercourse in the Republic, for preventing improper interference by rail with movements of freight by water, and to create as perfect a system of terminals on watercourses as can possibly be devised, it expects to do this in the future, as in the past, without animosity towards railways, which it recognizes as the most beneficial agents of transportation the world has ever known. It wishes to be friendly with the railways, and why not? There is glory and business enough for both rail and water. There are many localities which cannot be served by water and belong entirely to the railroads. Moreover, it is well known that wherever there exist the best waters and the greatest number of boats, are also found the most prosperous railroads. It is earnestly hoped, therefore, that these two great agencies will work together in harmony for the good of the Union.

The Congress feels just pride in the partial success of its efforts for the past six years, and looks with confidence to the future in the belief that the next six will see the fruition of its aims. Much has been done, but the greatest is yet to come. Rivers and harbors now receive appropriations annually, and the items approximate forty millions a year; but the definite, comprehensive, business-like plan for improving every worthy watercourse is still unsettled; the problem of terminals is a giant one whose solution is scarcely yet begun; the actual navigation of rivers and internal waters—now sadly neglected—must be restored; and a system of laws must be evolved to insure full justice to every agent of transportation. Let the organization continue its fight until all these and many other good things have been accomplished.



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fur trade, which in the Colonial period furnished the chief subject of transportation between the Great Lakes country and the Atlantic Coast, there came a demand for an outlet through which the products of the soil then beginning to be raised in the western part of New York State could be brought to the sea. As roads were then few and bad, and transportation upon them difficult, the subject of water routes came naturally to the minds of men.

It has been a subject of much discussion as to who first conceived the idea of an artificial connection between the Great Lakes and the Hudson River. It is not the writer's intention to enter into this discussion. In fact, the question is one by its nature incapable of solution, as the idea must have occurred to many minds at about the same time, and to determine priority between them would be an impossible and profitless task.

DE WITT CLINTON, FROM A PAINTING BY CHAPPEL

In the language of DeWitt Clinton in his pamphlet, "Canal Policy of the State of New York," "several persons may at different times have suggested the utility or practicability of connecting the waters of the Hudson and the Great Lakes, and the idea would naturally occur to every intelligent person who visited our Western country, and has probably been entertained not only in the minds of most of the inhabitants, but has been frequently expressed by them at various times, and on different occasions. Any peculiar merit on this occasion must arise from initiating a procedure to obtain a proper plan of connection, from projecting this measure, from urging its adoption or from aiding in its execution."

Bearing this in view we shall begin our narrative with the first steps actually taken with a view to establishing a connection between the Great Lakes and the Hudson River.

II.

THE PRELIMINARY PERIOD

The first project which was presented in a tangible form appears to be that contained in the report of Christopher Colles, an Irish engineer, in a memorial to the Legislature of the State of New York with respect to certain improvements on the Mohawk River. In the year 1785, Mr. Colles presented a report to the Legislature in which he called attention to the gap in the Appalachian chain through

which the Mohawk River passes and to the proximity of the upper reaches of the Mohawk to Wood Creek, which is on the opposite side of the watershed. He also indulged in expressions which, in the light of history, seem almost prophetic, as to the astonishing effect which might be expected by a junction of the Mohawk River with the Great Lakes.

At that time the population of the State was not half a million and was almost entirely confined to its eastern portion. The West, however, was growing and both travel and commerce constantly increasing. Mr. Colles projected a canal at Rome to connect the Mohawk with Wood Creek so that access might be had by Oneida Lake and the Oswego River at Oswego, and proposed the formation of a company to construct this canal and two others on the Mohawk to avoid Little Falls and the Cohoes Falls. This project failed, however, for lack of subscriptions to the stock of the proposed company.

In the following year the Legislature appointed a commission consisting of Goldsbrow Banyar, Gen. Philip Schuyler and Elkanah Watson "to examine and report on making a canal from Wood Creek to the Mohawk River." Nothing seems to have followed from this appointment. In the same year a bill was introduced in the Legislature entitled "An act for improving navigation of the Mohawk River, Wood Creek and Onondaga River with a view to opening an inland navigation to Oswego and for extending the same, if practicable, to Lake Erie." This bill, however, did not become a law.

Though nothing resulted directly from these projects, they doubtless had their influence in arousing the interest of public men in the subject to which they related and led up to the formation of the canal companies which mark the next step in the evolution of the canal policy finally adopted by the State.

"The Inland Lock Navigation Companies" so called, consisting of the Western Inland Lock Navigation Company and the Northern Inland Lock Navigation Company, were private enterprises incorporated by act of the Legislature in 1792. General Schuyler presided over both bodies.

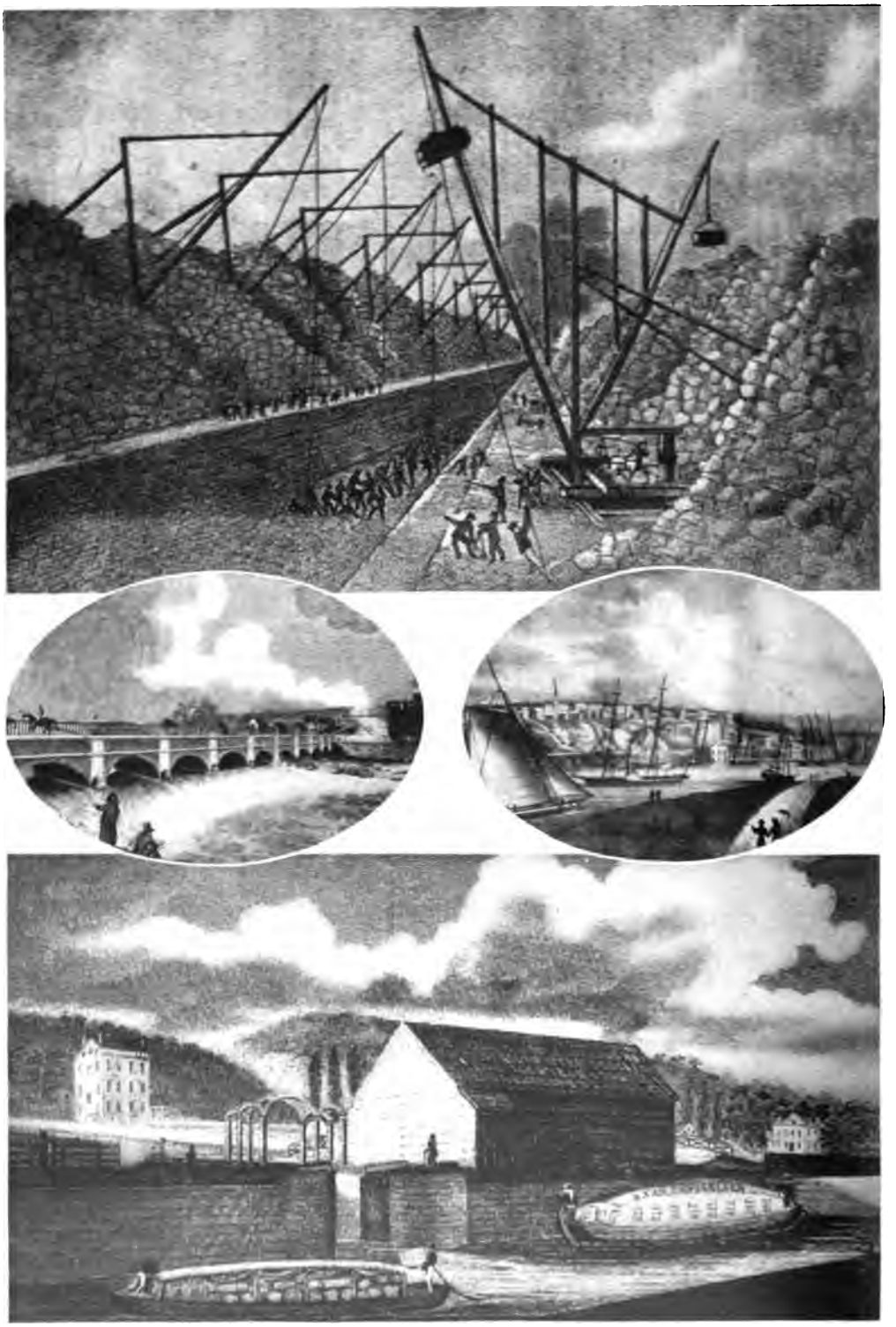
It was contemplated that the Western Company should open a line of navigation from the Hudson River to Lake Ontario and Seneca Lake; and the Northern Company, a similar line from the Hudson River to Lake Champlain. The canals of the Western Company were to be of dimensions to accommodate vessels drawing two feet of water, forty feet long and twenty feet beam, and the company was to be entitled to charge tolls not exceeding the sum of $25.00 per ton burden of the vessels passing through the canals.

It was the intention of the promoters and of the Legislature that the necessary funds for construction should be raised by subscription to the stock of the companies, but state aid to the extent of $12,500 was provided for, to be paid when double that sum had been spent on construction. The original estimate for the work undertaken by the Western Company to open navigation between the Hudson River and Seneca Lake was $200,000, but before the company was finally taken over by the State its expenditures for that purpose amounted to nearly half a million.

This work consisted of a canal about two miles in length connecting the Mohawk River and Wood Creek, which would accommodate boats drawing three and one-half feet of water, a shorter canal at German Flats and locks at Little Falls. The company had considerable difficulty in procuring funds to prosecute the work, and the State becoming a large stockholder and creditor, ultimately absorbed the company and its canals when the construction of the Erie Canal was finally undertaken.

The work accomplished by the Western Inland Lock Navigation Company not only disappointed its stockholders so far as financial returns were concerned, but was totally inadequate to accommodate the growing commerce between the eastern and western parts of the State, and the company never completed the work it had undertaken. In the meantime, the idea that the canals should be constructed and owned by the State had been gaining ground.

In March, 1810, Joshua Forman of Onondaga suggested to Senator Jonas Platt at Albany that, in the interests of the Western Inland Lock Navigation Company, the Legislature appoint a commission to investigate and report with respect



VIEWS OF THE ORIGINAL ERIE CANAL — *From Old Prints and Golden's Memoir (1825)*

PROCESS OF EXCAVATION, LOCKPORT

VIEW OF THE AQUEDUCT BRIDGE AT ROCHESTER

BUFFALO, FROM THE LIGHTHOUSE

ENTRANCE OF THE ERIE CANAL INTO THE HUDSON AT ALBANY

to extending navigation by water from Oneida Lake to Seneca Lake. Senator Platt took up the matter with DeWitt Clinton, and by the combined influence of the two the Legislature in March, 1810, appointed a commission of seven members who were to examine the country from Lake Erie to the existing waterways terminating at Oneida Lake, with a view to finding a practicable route for a canal connecting the two points.

This commission consisted of Gouverneur Morris, Stephen Van Rensselaer, DeWitt Clinton, Simeon DeWitt, William North, Thomas Eddy and Peter B. Porter. The commissioners traveled the entire route in the year of their appointment, and DeWitt Clinton has left a journal of the trip which contains many interesting observations upon the state of the country at that time. This appears to have been the first direct connection of DeWitt Clinton with the canal policy of the State.

The commission made a report to the Legislature in which they suggested the construction of a canal upon the principle of an inclined plane from Lake Erie to a point between Schenectady and Albany, and from thence by locks to the Hudson. This suggestion as to the method of constructing the canal was chiefly due to Gouverneur Morris and was not that which was finally adopted. James Geddes accompanied the commission on their trip as surveyor, and thus took part in the initial steps towards the construction of the canal, in which he afterwards acquired a great reputation.

The commission reported to the Legislature in March, 1811, but their work being incomplete, they were continued, or rather a new commission was created in April, 1811, consisting of the same men, with the addition of Robert Livingston and Robert Fulton. The commissioners were directed to ascertain whether the Federal Government would assist the project before the rights of the Western Inland Lock Navigation Company could be acquired by the State, and to consider the financial problems involved in the enterprise.

This commission reported that the canal could in their opinion, be constructed at a cost of six millions of dollars. They were unsuccessful in obtaining any assurances of aid from the Federal Government or any practical assurances of aid from the other States of the Union, and their negotiations with the Western Inland Lock Navigation Company resulted only in having that company fix a price for its property and rights which they deemed exorbitant. The commissioners were strongly in favor of having the work undertaken by the State at once, and at their request a bill was passed by the Legislature, authorizing them to deal conditionally with the Western Company for the surrender of its rights and to negotiate for a loan of five millions of dollars for the prosecution of the work.

Nothing was accomplished at this time, as the War of 1812 interrupted the labors of the commission and diverted the attention of public men from the consideration of the problem, and in 1814 the Act authorizing the commissioners to negotiate a loan was repealed. In the following year public interest was again aroused in the canal project and a public meeting was held at New York at which Judge Platt, DeWitt Clinton and others spoke in favor of construction of the canal by the State. By direction of the meeting a memorial to the Legislature was prepared by DeWitt Clinton, which ably set forth the reasons in favor of the enterprise and had great weight in determining the action of the Legislature when the subject came up for its consideration in 1816.

THE COHOES FALLS FROM THE DAM

In March, 1816, the commission appointed in 1811, reported to the Legislature, urging construction of the canal from Lake Erie to the Hudson and also the Northern canal, or as it is now termed, the Champlain Canal. Mr. Morris did not concur in this report. In April of that year

a third commission, consisting of Stephen VanRensselaer, DeWitt Clinton, Samuel Young, Joseph Ellicott and Myron Holley, was established with a fund of $20,000 to make necessary surveys, plans and estimates for the proposed canals and to consider and report upon the financial situation.

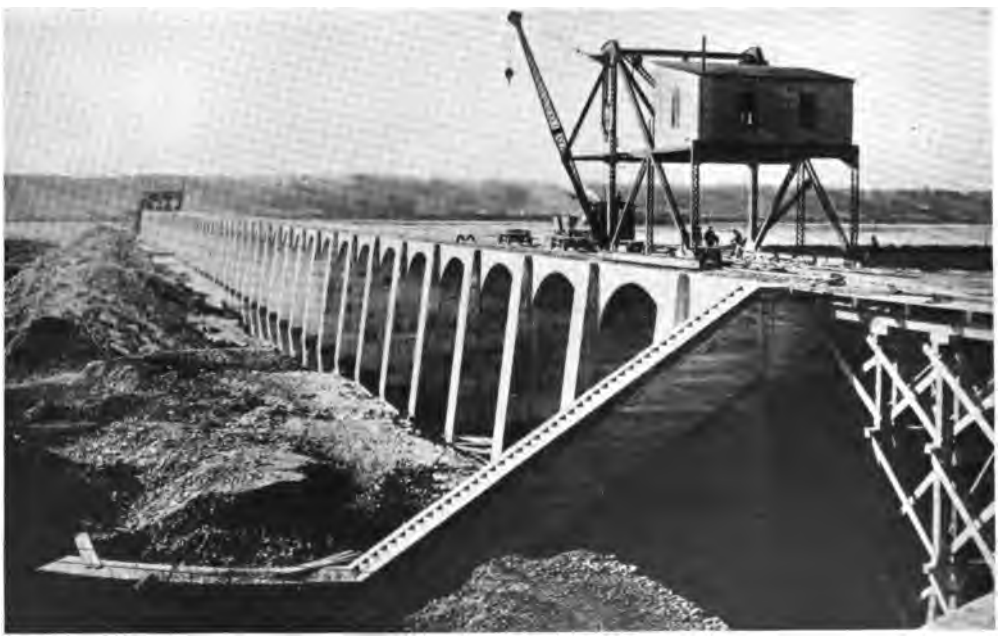
The commission organized with DeWitt Clinton as president, and divided the work on the Erie Canal into a Middle, an Eastern and a Western section, which division has in substance been maintained ever since. The commission reported to the Legislature in February, 1817, recommending the construction of a canal with a depth of four feet, twenty-eight feet wide at the bottom, forty feet at the surface and with locks ninety feet long by twelve feet wide, saying that "vessels carrying one hundred tons may navigate a canal of this size."

Their report gave the plans in detail and an estimate of the cost of construction, and was made chiefly from actual surveys of the route. They estimated the cost of the canal from Lake Erie to Albany at slightly less than five millions of dollars, making an average of a little over $13,800 per mile. They also obtained from the Holland Land Company an offer of a grant of a large tract of land for canal purposes. They were, however, again unsuccessful in their attempts to procure Federal aid.

The report of the commissioners became the subject of animated discussion and debate in the Legislature and it was largely due to the eloquence and power of Elisha Williams of Columbia that the Legislature took favorable action. On the 15th day of April, 1817, an act was passed authorizing the commencement of the work under the direction of the commission already in existence, which was continued in office. It was not thought advisable to authorize the construction of the entire canal at first, and the middle section only was undertaken.

EDITOR'S NOTE:—The next installment of Mr. Clinton's History of the Erie Canal, which takes up the construction period, will appear in an early issue.

THE COLOSSAL KEOKUK DAM FOR WATER POWER AND NAVIGATION



Looking from the Illinois end of the Keokuk Dam, the longest concrete wall ever built. Seven-eighths of a mile from the Illinois shore will be the power house, 1800 feet long, standing at right angles to the section here shown. Next the Iowa shore is a lock as wide as those at Panama and which will replace with one lift the three locks now in use. Built by private capital, primarily for power, the dam makes a great improvement in navigation, as it creates a slackwater lake 65 miles long. Hugh L. Cooper is chief engineer. Photo by Anschutz, the official photographer.

A NEW USE FOR WATERWAYS

By JEROME FANCIULLI

THE hydro-aeroplane, the new craft designed for both air and water, to which the students of aviation are now turning for the solution of safe navigation of the air, is the subject of this article. Mr. Fanciulli is the Vice-President of the Curtiss Aeroplane Company and has been identified with aeronautics since the infancy of that science. He speaks not only from a thorough knowledge of the subject but with an undercurrent of enthusiasm that is most convincing of the possibilities of this remarkable craft.

AN article dealing with aviation wouldn't be in keeping with established custom if reference wasn't made to Icarus' famous flight; to show how man has aspired to emulate the birds for ages past. The ancient Greek aviator had one good practical idea, though, when he selected the sea as his flying course. The up-to-date Icaruses are all sprouting webfeet, and indications are that over-water flying is going to prove the salvation of the aeroplane industry.

Beginning with the earliest experimenters, those concerned in the progress of dynamic flight have recognized the advantages that make water courses the logical "aviation fields." The uniform smoothness of the water's surface disposes of the dangers of ditches, tree-stumps and other irregularities of the land. Obstacles on the water are few and far between. In flights over land, aviators are continually dodging or colliding with trees, buildings, stone walls, fences and other inconveniently located objects that conspire to confine aviators to the dare-devil class.

One of the principal conditions existing that makes water-courses appeal to aviators is the steadiness of the wind, due to its having a free sweep. The sweep of the wind holds no terrors for the flying men; it is an unsteady, or choppy wind that causes the accidents that have been attributed to windy weather. When a wind sweeps over a bay, or lake, or river, it is not broken up into eddies and gusts as it is over an uneven country where even the differences of temperature in light and shade cause upward and downward currents of air. "Swiss Cheese Atmosphere," as the aviators call it, and small or rough landing places are the two most dangerous conditions the man-birds have to contend with. With these dangers eliminated, as they are in over-water flying, there remains only the possibility of the flying apparatus itself giving way.

The peculiar conditions surrounding marine flying safeguard the operator and his passengers even when his machine collapses in the air. The hydro-aeroplane can be operated close to the surface of the water. In consequence, under the worst possible circumstances, a ducking is the most serious "injury" the occupants of the machine can suffer. This is not a theory born of enthusiasm. It is a demonstrated fact.

I have witnessed accidents to hydro-aeroplanes in which the operator was unhurt, but which would have resulted in certain death had they occurred on land. Last February, while I was having demonstrations of the Curtiss hydro-aeroplane made on the French Riviera, Hugh Robinson, the aviator, was forced to dive his machine straight down into the water in order to avoid running down a large crowd that had gathered on the edge of the beach. Traveling at a speed of sixty miles an hour with a forty-mile wind, which means a speed of nearly one hundred miles an hour relative to the earth, Robinson shot out of the machine when it hit the water. He was not even stunned,

OLD LONDON TOWN GETS A GLIMPSE OF

T. K. McCLEAN'S FLIGHT ON THE THAMES, MARKING THE
HELD UNDER THE AUSPICES OF "THE SPHERE."

WHAT THE "WATER-BIRD" MAN CAN DO

FIRST SUSTAINED FLIGHT ON THAT HISTORICAL WATERWAY

THROUGH WHOSE COURTESY THIS PICTURE IS USED

but his machine was practically a complete wreck.

He is only one of a number of aviators who have refused and determined not to make any more flights with land-aeroplanes, although he flies the hydro-aeroplane by the hour for the fun there is in it. Lieutenants Ellyson and Towers, of the United States Navy; Louis Paulhan, the Frenchman; Grahame-White, the English aviator, and a score of others prominent in the flying world, including Glenn Curtiss, have declared they will never again attempt flights over the land, although all of them are regular operators of the aquatic aeroplanes. They all maintain that marine flying is even safer than automobiling.

The idea of over-water flying is not new. If the powerful light-weight gasolene engines on the market now had been built fifteen or twenty years ago, it is doubtful if there ever would have been anything but marine aeroplanes. Langley, Chanute, Kress and many others conducted their early aeroplane experiments on the water. Langley, who was at that time at the head of the Smithsonian Institution, attempted to launch his machine from a raft on the Potomac River near Washington. Chanute, the father of the biplane, conducted his experiments on the shores of Lake Michigan. Kress built a hydro-aeroplane in Austria, as long ago as 1898.

It was the steadiness of the sea-winds that induced the Wright brothers to conduct their early trials on the North Carolina coast. The Aerial Experiment Association, with Alexander Graham Bell at

its head, located its experimental station on the shores of Lake Keuka, in New York State, making flights over the ice-covered lake in winter.

Since Henry Fabre, a young French engineer, made the first flight with a hydro-aeroplane, on March 28, 1910, the advancement of this type of flying machine has been very rapid. In this country the lead was taken by Glenn Curtiss, who produced a successful marine flying machine in January, 1911, and by W. Starling Burgess, the boat builder of Marblehead, Massachusetts, in the latter part of the same year.

The Curtiss hydro-aeroplane is supported on the water by a flat-bottomed pontoon, two feet wide and sixteen feet long. The Burgess type of hydro-aeroplane uses two long slender pontoons, placed about six feet apart. These pontoons take the place of the wheels of a land apparatus, and there is really only that one difference between the water and land machines.

The single pontoon flotation requires two auxiliary pontoons, one placed at the end of each wing; but it is claimed for this type that the single pontoon accommodates itself to the waves of rough water without causing the wings of the hydro-aeroplane to dip into the water, thus capsizing the machine.

The first important flight over a water-

© *Paul Thompson, N. Y.*

AT WEYMOUTH, ENGLAND, LIEUT. GREGORY DROPPED A LUMP OF METAL WEIGHING 300 POUNDS NEAR THE ROYAL YACHT "VICTORIA AND ALBERT," FROM AN ALTITUDE OF 400 FEET, TO DEMONSTRATE TO KING GEORGE HOW A BATTLESHIP MIGHT BE DESTROYED.

course was that made by Mr. Curtiss from Albany to New York, on May 29, 1910, for the New York *World's* ten-thousand-dollar prize. The distance of approximately 152 miles was made in 152 minutes, without counting the time occupied in stopping at Poughkeepsie for fuel and oil. The machine used on this occasion was an ordinary Curtiss aeroplane, having the land equipment, but supplemented by two cylindrical pontoons that would have permitted the aviator to alight on the water in case of necessity.

It was that flight which led Mr. Curtiss to devote himself seriously to the development of the hydro-aeroplane. On finishing his trip from Albany, Mr. Curtiss said that nothing he had ever experienced was so inspiring as the flight along the Hudson Valley, and that the conditions were so perfect that he had nothing to do but enjoy the scenery.

Even before the hydro-aeroplane had become perfected other long flights over water were made with machines equipped with pontoons for alighting, but not arising, from the water. Mr. Curtiss flew from Cleveland to Sandusky and back, over Lake Erie, for a distance of 140 miles. J. A. D. McCurdy made a wonderful flight from Key West to Havana, a distance of 100 miles across the Gulf Stream. He was compelled to alight on the water near Morro Castle, but suffered no mishap. Other flights were made in Europe, including a number of trips across the English Channel.

THE CURTISS "FLYING BOAT"
THE LATEST DEVELOPMENT OF THE HYDRO-AEROPLANE

It has been through the construction of the hydro-aeroplane, however, that the field for marine aviation has really opened up. Robinson's flight down the Mississippi River, from Minneapolis to Rock Island, a distance of nearly 400 miles, demonstrated the practicability of the marine aeroplane. On this occasion, the aviator delivered and received mail at the various important towns along the river. Traveling at a speed that averaged over seventy miles an hour, the hydro-aeroplane on that occasion demonstrated in a very practical manner a new use to which the waterways of the country will be put.

To my mind this carrying of the mails offers the most practical application of the marine flying craft in its present stage of development. Many places situated on watercourses suffer serious loss through poor railroad service. This means poor mail service, which is detrimental to any community. Aeroplane manufacturers can now build machines that can carry nearly a ton of weight for long distances, at a speed of sixty miles an hour. Aerial mail delivery service with such machines on those waterways reaching towns that have little or no railroad service would be of incalculable value.

Aerial mail service along watercourses would afford the fastest transportation of the mail at a minimum expense. A route two hundred miles long could be covered twice a day with a thousand pounds of mail matter at a total annual expense of $18,000, including the cost of equipment. These machines, used for aerial mail service, could do a double duty in that the operators could discover breaks in the river banks during high-water periods. It is even possible that they could discover changes in the channels of the streams, this depending on the clarity of the water. They could, most certainly, discover forest fires, and in doing these duties would be acting as a very efficient patrol.

As an auxiliary for the Navy, hydro-aeroplanes are of proven merit. Mr. Curtiss on one occasion was hoisted aboard the battleship "Pennsylvania," after having alighted alongside in one of his hydro-aeroplanes. After being lowered again into the water he flew back to shore. This was done nearly two years ago. Lieutenants Towers, Ellyson and Rodgers, hydro-aeroplane operators of the United States Navy, have made many long flights

PRACTICAL DEMONSTRATIONS OF THE HYDRO-AEROPLANE

THE WAR EAGLE'S AERIE

AN HYDRO-AEROPLANE ON H. M. S. "HIBERNIA"

MANOEUVERING

CHARLES C. WITMER MANOEUVERING A CURTISS HYDRO-AEROPLANE ON THE HUDSON RIVER DURING THE NAVAL RENDEZVOUS

CARRYING THE MAILS

CAPT. PAUL W. BECK, U.S.A., IN CURTISS BIPLANE, AT NASSAU, CARRYING POSTMASTER-GENERAL HITCHCOCK, ACTING AS POSTMAN AND CARRYING U.S. MAIL SACK WEIGHING FORTY POUNDS. FIGURES IN FOREGROUND, FROM LEFT TO RIGHT, ARE POSTMASTER-GENERAL HITCHCOCK, CAPT. BECK & ATTORNEY-GENERAL WICKERSHAM

AS A LIFE-SAVER

ROBINSON IN HYDRO-AEROPLANE RESCUING SIMON AT THE CHICAGO AVIATION MEET. A PRACTICAL PROOF OF THE LIFE-SAVING POSSIBILITIES OF THE HYDRO-AEROPLANE

THE CAMERA AND HYDRO-AEROPLANE

A REMARKABLE PHOTOGRAPH TAKEN FROM AN AEROPLANE IN MID-AIR, SHOWS WHAT A WAR SPY COULD DO. TAKEN AT A HEIGHT OF 1200 FEET, WHILE GOING 45 MILES AN HOUR. MR. FASOLD, THE PHOTOGRAPHER; MR. HOWARD GILL, THE AVIATOR

Boston Photo News Co.
Underwood & Underwood, N.Y.

in smooth and rough waters, while using the Government's marine flyers. For naval purposes improvements are yet to be made in the matter of launching from the war vessels and in storing the machines compactly on shipboard. These same features will make the hydro-aeroplane a useful yacht tender.

Aside from their value to the Navy, the aquatic aeroplanes have already been recognized as excellent auxiliaries to the coast defences. For detecting the approach of an invading enemy and for patroling the coast swiftly and thoroughly, they will prove more efficient and less expensive than scout crusiers. Traveling at the rate of seventy or eighty miles an hour, with a crew of two, one hydro-aeroplane could patrol a coast line that would require a half-dozen cruisers with crews aggregating nearly a thousand men.

The equipment of life-saving stations with hydro-aeroplanes has been seriously discussed. There are already two instances on record where hydro-aeroplanes have figured in rescues on the water. At the Chicago aviation meet last year, Hugh Robinson was flying from the yacht basin at Grant Park, using a Curtiss hydro-aeroplane, when Simon, flying a monoplane that had no means of floating on the water, was forced to descend to the lake. In less than a minute after the monoplane struck the water, Robinson was alongside rendering assistance. On another occasion W. B. Atwater, in an hydro-aeroplane, flew to the rescue of two naval aviators who came to grief in San Diego Bay.

The most beautiful scenery is that along watercourses. How much of it can be seen from a railroad train or an automobile as compared with an aeroplane from which a moving bird's-eye panorama takes in the country as far as the eye can see? Add to this the exhilaration of speeding at express train speed—with no constables and speed laws to worry about—and a smooth unobstructed place for alighting at all times.

The hydro-aeroplanist is vitally interested in the improvement and care of the waterways of the country. That statement has not many hydro-aeroplanists to back it up; nevertheless it is significant because, in judging the future by the past progress in aviation. marine flying must become immensely popular. For hydro-aeroplaning, a watercourse, to be of value, must be at least eighty feet wide. This does not mean that there cannot be stretches of a mile or two where the watercourse could be narrower.

So far as the waterways over which the hydro-aeroplane would fly are concerned, those things which menace marine navigation would to some extent annoy the marine aviator.

A flight from New York to Chicago, by means of an hydro-aeroplane, is thoroughly practicable, but if there were a good broad canal from Toledo to Benton Harbor or Michigan City, the length of the route which would have to be followed would be materially shortened. In two or three days the hydro-aeroplanist could take a thousand-mile jaunt to Chicago in the pleasantest way imaginable, whereas it now takes an automobilist a week to ten days to make the trip in comfort. I venture to suggest that when the pleasures of aquatic flying become more generally known, the movement for improved waterways will enlist many new enthusiasts, for which the hydro-aeroplane will be responsible.

The various uses I have described for the hydro-aeroplane are now possible, and yet the water-flying machine of today is only a crude beginning. The first step towards refinement is the so-called flying boat. Although not nearly perfected, there are already a number of successful machines of this type. In this country Mr. Curtiss has again taken the lead in this latest development of the aeroplane industry. Much progress has also been made abroad, where Lieutenant Conneau, of the French Navy, made a flight in a Donnet-Leveque flying boat from Paris to London.

This machine will undoubtedly be the connecting link that will bring the flying machine into a really substantial commercial field. It will be the aerial touring car, and will be most useful for mail carrying, parcels posts, fast express and passenger service between cities, and as a yacht tender.

Aeroplane manufacturers have taken up the hydro-aeroplane most enthusiastically, the attention of the aviation world is centered on the development of this type of craft, and soon the vast possibilities of over-water flying will begin to be realized.

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WHEN President William Howard Taft attached his signature to H. R. 21477, commonly known as The River and Harbor Bill, on July 25, 1912, he emphasized in the strongest possible manner the position taken by the National Rivers and Harbors Congress since its inception, that there should be an annual river and harbor bill, and that the policy of sporadic appropriations for the improvement of the rivers and harbors of the country should forever be abandoned.

The River and Harbor Act of 1912 appropriates $33,259,370.50, of which $31,059,370.50 is cash and $2,200,000 is contract authorizations.

Of the 265 items in the act of 1912, 178 are for the maintenance of completed works, 35 for continuing work in whole or in part by governmental agencies and hired labor, 37 for completing work and 15 for continuing work where provision for completion is not regarded as essential, at this time, by the Chief of Engineers.

The act appropriates $600,000 for the purchase of a canal between Norfolk, Va., and Beaufort, N. C., the second link in the chain of inland waterways between New England and the Florida Keys.

A Harbor of Refuge is provided for at Cape Lookout, N. C., with an appropriation of $300,000.

Six millions are made available for the prosecution of levee construction and bank revetment on the Mississippi. The Ohio River receives $4,541,000 in cash and contract authorizations to prosecute its great system of slack-water navigation.

A fourth lock on the St. Mary's River is authorized, with an appropriation of $300,000 to begin work.

The Missouri River is to be made a magnificent highway of commerce, the Act of 1912 carrying an appropriation of $800,000 which, with an appropriation of $600,000 carried in the Sundry Civil Bill, makes available $1,400,000 to be expended between Kansas City and the mouth.

Nearly two millions are available for the Columbia River in the States of Oregon and Washington.

In many particulars the Act is far in advance of previous measures of like character and takes advanced stand for projects that, until this year, were in a formative state.

WATERWAY LEGISLATION—PAST AND PRESENT

By STEPHEN M. SPARKMAN, *M. C.*

MR. SPARKMAN is certainly thoroughly well qualified to write concerning legislation for waterways. He has represented the First Florida District in Congress since 1895 and is Chairman of the Committee on Rivers and Harbors, of which he has been a member since 1896.

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THE improvement of the harbors and navigable waterways of the country by the Federal Government, though attended with many difficulties in the earlier years of the Republic, has nevertheless been carried on with a marked degree of success. The obstacles in the way of this class of work during the first decades of our history were largely the result of political conditions and the construction placed upon the Federal Constitution by many of our leading statesmen.

The strict constructionist of that instrument could for a long time find therein no warrant for the expenditure of money by the General Government on rivers and harbors, no matter what the necessities demanding their improvement. Few in those earlier days thought of looking to the commerce clause of the Constitution for any such power. In fact many, including prominent jurists of that period, regarded that provision as only furnishing authority for the promulgation of rules by which interstate commerce might be regulated. It was easier to find authority for the construction by the Federal Government of post roads, whether intra or interstate, and early in our history as a nation we were more inclined to enter upon that line of governmental activity than to improve our navigable waterways.

To be sure, this sentiment against the participation by the Government in the improvement of rivers and harbors was not unanimous, but it was sufficiently strong to confine Congress for many years to permissive legislation, mainly the granting of authority, to make such improvements, to individuals or to the States. Gradually, however, and following the decisions of the Federal courts, cautiously enlarging and extending the scope of the commerce clause in the Constitution as at first understood, this sentiment underwent a change, and as early as 1816 Congress began to appropriate for river and harbor improvement; doing so, however, intermittently and sparingly for many years.

It was not until the formation of the Rivers and Harbors Committee, in 1883, that the national law-making body seriously entered upon that class of work. Down to that time only $125,147,022.38 had been appropriated, bills for which had been reported mainly by the Committee on Commerce, now the Interstate and Foreign Commerce Committee, though thirteen had been prepared and submitted by the Committee on Ways and Means, and three by the Committee of the Whole House without reference to any special or standing committee.

Since the formation of the Rivers and Harbors Committee, a period of only twenty-nine years, a little over $575,000,000 has been appropriated for the improvement of our harbors and inland waterways, the whole aggregating a little upward of $700,000,000. Of this, $186,576,653.21 have been for the Atlantic Coast harbors and waterways; $66,429,803.17 for the Gulf and its waterways, exclusive of the Mississippi River; $53,281,821.36 for the Pacific and its rivers; $131,557,941.20 for the Great Lakes basin; and $270,697,173.77 for the Mississippi River system, while about $5,500,000 have

been for the Hudson Bay basin, Alaska, Porto Rico, Hawaii, and for miscellaneous purposes.

The total number of improvements for which this aggregate has been appropriated is slightly in excess of five hundred and thirty. Now $700,000,000 is a large sum for any country to expend on its harbors, rivers and canals, and it proclaims the fact that the Federal Government has not neglected our navigable waterways.

Nor have the results been disappointing, whether we consider the physical work accomplished or the benefits accruing to commerce. The most of the projects undertaken have been carried to completion, resulting in marked improvement of the navigable features of the waterways. Channels have been widened, banks made more stable and eighteen important canals constructed; and where greater depth has been sought, as in most instances, the increase has been from one to twenty-six feet. So that with our three hundred and one harbors, great and small, and our twenty-five thousand miles of navigable rivers and canals, we have the finest system of waterways in the world. When we consider that no stream, even though classed as navigable, is in its natural state suitable for modern commerce, and that all of our harbors have required improvement to fit them for the ever-increasing demands of commerce, one can readily understand that at least adequate physical results have come from the large aggregate of appropriations made.

Then, too, the benefits accruing to the commerce of the country, both foreign and domestic, as evidenced by its phenomenal growth following the physical development of those waterways, have likewise been gratifying. It is true that on a few projects, commercial results commensurate with the outlay have not followed improvement, but in a large majority of instances an increased commerce has been the result.

Mr. Alexander H. Weber, C. E., Assistant Engineer and Secretary to the Board of Engineers for Rivers and Harbors, in a very interesting and instructive article written in 1910, estimated this increase at 340,217,700 tons. In that statement reference is made to the total tonnage of all rivers, harbors and canals, which includes many duplications; but it is nevertheless instructive, as it shows the commercial importance of the respective improvements. The actual existing water-borne commerce is somewhat difficult of ascertainment, but Mr. Weber fixed the amount of the then existing commerce, after due allowance for duplications, at approximately 256,000,000 tons. The Interstate Commerce Commission makes it something more, giving the amount for the year 1906 as 265,545,804 tons. Even the smaller figures present a good showing and one that should greatly encourage the friends of waterway improvement.

But the whole story is not told in a simple statement of the increase of our water-borne commerce. It is worth much to furnish the people with additional facilities for the distribution of their products among the consumers of this and foreign countries. It is also gratifying to find these facilities utilized for the purposes designed, resulting in a largely increased water-borne commerce. But when we consider the great reductions in freight rates that have come as a result of these improvements, the full significance of the work done may be appreciated.

It is difficult to determine just what this reduction has been, but we know it is large. The Annual Reports of the Chief of Engineers, who is required to report upon the effect of such improvements on freight rates, show that in many instances such reductions have been as much as fifty per cent., and even more in some localities, which would indicate that the reductions effected have averaged more than a dollar a ton. Even if an average saving of half that amount has been effected each year on our water-borne commerce alone, the aggregate for all these years has been enormous and amounts to much more than the large sum expended on our waterways. When to this saving is added the influence these improvements have exerted over railroad transportation, the freight tonnage of which amounts now to more than one billion tons per annum, it will be seen that the people have been well repaid for the large outlay by the Federal Government, even though not all the waterways thus improved have shown satisfactory results so far as increased traffic is concerned.

As before stated, there are not many

WHAT THE THREE LEADING PARTIES SAY ABOUT WATERWAYS

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From Democratic Platform

We renew the declaration in our last platform relating to the conservation of our natural resources and the development of our waterways. The present devastation of the lower Mississippi valley accentuates the movement for the regulation of river flow by additional levee and bank protection below, and the diversion, storage and control of the flood waters above and their utilization for beneficial purposes in the reclamation of arid and swamp lands and the development of water power, instead of permitting the floods to continue, as heretofore, agents of destruction. We hold that the control of the Mississippi River is a national problem. The preservation of the depth of its water for the purpose of navigation, the building of levees to maintain the integrity of its channel, and the prevention of the overflow of the land, and its consequent devastation, resulting in the interruption of interstate commerce, the disorganization of the mail service and the enormous loss of life and property impose an obligation which alone can be discharged by the general government.

To maintain an adequate depth of water the entire year and thereby encourage water transportation, is a consummation worthy of legislative attention and presents an issue national in its character. It calls for prompt action on the part of Congress, and the Democratic party pledges itself to the enactment of legislation leading to that end.

We favor the cooperation of the United States and the respective States in plans for the comprehensive treatment of all waterways with a view of coordinating plans for channel improvement with plans for drainage of swamp and overflowed lands, and to this end we favor the appropriation by the Federal Government of sufficient funds to make surveys of such lands, to develop plans for draining the same and to supervise the work of construction.

We favor the adoption of a liberal and comprehensive plan for the development and improvement of our inland waterways, with economy and efficiency, so as to permit their navigation by vessels of standard draft.

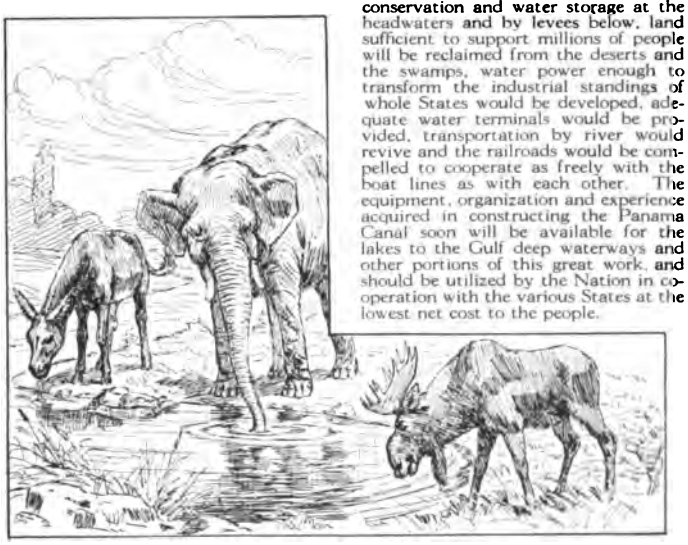
From Republican Platform

We favor a liberal and systematic policy for the improvement of our rivers and harbors. Such improvements should be made upon expert information and after a careful comparison of cost and prospective benefits.

The Mississippi River is the Nation's drainage ditch. Its flood waters, gathered from thirty-one States and the Dominion of Canada, constitute an overpowering force which breaks the levees and pours its torrents over many million acres of the richest land in the Union, stopping mails, impeding commerce, and causing great loss of life and property. These floods are national in scope and the disasters they produce seriously affect the general welfare. The States unaided cannot cope with this giant problem. Hence, we believe the Federal Government should assume a fair proportion of the burden of its control so as to prevent the disasters from recurring floods.

From Progressive Platform

The rivers of the United States are the natural arteries of this continent. We demand that they shall be opened to traffic as indispensable parts of a great nation-wide system of transportation in which the Panama Canal will be the central link, thus enabling the whole interior of the United States to share with the Atlantic and Pacific seaboards in the benefits derived from the canal. It is a national obligation to develop our rivers, and especially the Mississippi and its tributaries, without delay, under a comprehensive general plan covering each river system from its source to its mouth, designed to secure its highest usefulness for navigation, irrigation, domestic supply, water power and the prevention of floods. We pledge our party to the immediate preparation of such a plan, which should be made and carried out in close and friendly cooperation between the Nation, the States and the cities affected. Under such a plan the destructive floods of the Mississippi and other streams, which represent a vast and needless loss to the Nation, would be controlled by forest conservation and water storage at the headwaters and by levees below, land sufficient to support millions of people will be reclaimed from the deserts and the swamps, water power enough to transform the industrial standings of whole States would be developed, adequate water terminals would be provided, transportation by river would revive and the railroads would be compelled to cooperate as freely with the boat lines as with each other. The equipment, organization and experience acquired in constructing the Panama Canal soon will be available for the lakes to the Gulf deep waterways and other portions of this great work, and should be utilized by the Nation in cooperation with the various States at the lowest net cost to the people.



such instances as compared with the whole number of projects undertaken by the Government. Among those most prominently mentioned by critics of waterway improvement are the Illinois and Mississippi Canal, commonly known as the Hennepin Canal, and the Missouri and Mississippi Rivers. But there have been in each case peculiar and local reasons for the failure of the waterway to respond in commercial development to the improvement made, which will doubtless be removed in the future.

The Hennepin Canal was, perhaps, constructed too far in advance of any commercial demand for the same, but it is a substantial structure, easy of maintenance, and will doubtless last for an indefinite period. In the meantime, the country tributary to the canal is developing, farm and other products are increasing, freight tonnage on the waterway is growing—the whole suggesting that in a few years it will meet the hopes and expectations of its designers.

The amount of money spent upon the Missouri River is not large when the length and importance of that stream are considered, but it has not been in condition to develop a commerce in competition with the railroads paralleling its banks, since the work of improvement laid out by the engineers has never been carried to completion. The work has recently been resumed, however, and Congress has expressly determined to complete the project for the lower river—that portion between Kansas City and its mouth—within ten years.

It is hard to believe that the glory of this great waterway has departed, never to return. Traffic is already growing on the upper river, and arrangements have been perfected for the utilization of its lower part, based upon Congressional assurance that the work will be done within the time named. With the completion of existing projects and the growth and development of the country tributary to this great river, there is every reason to hope that a large and important commerce will again seek its waters.

A great deal of money, it is true, has been expended on the Mississippi River, more than on any other stream or waterway in the country, while its commerce has fallen off from that of a few years ago. But that river has been placed, and properly so, too, in a class by itself. It is navigable for two thousand, four hundred and thirty miles and, with its tributaries, drains forty-one per cent. of our continental domain, while the waters from thirty States are poured into its lower reaches.

The Panama Canal will soon be completed and open to traffic, which should have a stimulating influence upon all the Gulf ports and rivers, and especially upon that great waterway and its magnificent system of tributary streams. These considerations have kept alive a sentiment in favor of its continued improvement by the Federal Government, and that, too, in face of a constantly dwindling commerce. This feeling has recently found expression in the platforms of the great political parties of the country, in which they substantially pledge themselves to continue to final completion the improvements already begun. The Government is even doing there what it is not doing elsewhere —assisting the States and localities in the building of levees—but this work is being done on the theory that it improves the navigable features of the stream, which is doubtless true to a certain extent.

While the work of improvement had been going on for many years without any definite plan for finishing the work, Congress, in the River and Harbor Bill of 1910, embarked upon a plan for the completion of the project for the lower river within a period of eighteen years. Meanwhile, projects for the improvement of the middle and upper sections of the river have been adopted, work upon which is being prosecuted with reasonable speed. Hence, it is safe to say that within fifteen or sixteen years all these projects will have been completed and the work closed, except in so far as the care of the Government may be required for maintenance.

The adoption of a comprehensive plan of development and the standardization of waterways, so far as that is practicable, has been urged as a necessity by some earnest advocates of waterway improvement. The importance of this cannot easily be overestimated, but it should not be forgotten that we are already moving quite rapidly along those lines. True, we have no commission or other appointed body to inaugurate plans for improvement

and carry them to completion, as has been suggested should be done, but we have a system perhaps, just as effective, possibly even more efficient.

More than half a century ago this work was placed under the control of the War Department and its corps of engineers, who are equal in ability and efficiency to those of any other country. Under laws enacted by Congress from time to time an organization of this force has been perfected as capable of dealing with the improvement of our waterways, whether singly, as heretofore, or together under a general plan, as any commission appointed for that purpose, no matter from what field of activity the membership might be taken. The ordering of surveys, of course, has been left to Congress, as is the adoption of projects and the appropriation of money to prosecute the work thereon. But the making of surveys, the working out and submission of plans with estimates of cost, are given to the engineers.

This corps is composed of a chief and a board of five members, known as the Board of Engineers for Rivers and Harbors, located in the city of Washington, and nine division and fifty district engineers, whose jurisdictions cover the entire country, and who are familiar with the rivers and harbors and the necessities of commerce in each and every locality. Surveys, the preparation of plans and the making of estimates are in charge of the district officer who, in the performance of these duties, makes a thorough survey and study of the locality as to cost, feasibility from an engineering standpoint and the advisability of the work, and submits a report, with his recommendations, to the chief through the division engineer in whose division the district is located. He transmits the report, with his views thereon, to the Chief of Engineers, who, in turn, sends it to the Board of Engineers for Rivers and Harbors, where it is again thoroughly considered and returned, with the opinion of the board, to the chief, who then submits the report with his recommendation to the Secretary of War. The Secretary then transmits the whole to Congress, when the project is ready for consideration by that body.

The Chief of Engineers, ranking the entire corps, exercises supervisory powers over their work and can overrule or modify their recommendations, as he frequently does. The control of each and all projects being practically under one efficient head, the most intelligent direction may be given and, as a matter of fact, is given to the making and execution of plans for the improvement of a waterway so as to produce the best results. Not only have channels been widened and deepened and obstructions removed, but the work in the main has been done so as to make each harmonize with other similar works wherever harmony is necessary.

This has been, or will be, the effect of the improvement of the Mississippi River and its thirteen thousand miles of tributaries. That river has been divided into three parts consideration being given to natural depth, cost of improvement, tributary streams and commercial demands. A nine-foot low-water depth has been provided from the mouth to the Ohio, which is likewise being improved under a nine-foot project to Pittsburgh. An eight-foot project has been furnished from Cairo to St. Louis, a six-foot project thence to and up the Missouri to Kansas City, and the same in the Mississippi to St. Paul.

This will not only accommodate the commerce from St. Louis downward, and that of the Ohio from Pittsburgh, but the commerce of the Missouri and the upper reaches of the Mississippi as well. The same is true of other waterways, the engineers usually considering the improvement of the main stream with reference to its tributaries and the nearby waters over which its commerce may be floated to points of ultimate distribution.

The people, understanding the commercial necessities in the various communities, really initiate projects by making these necessities known to Congress; while that body, ever responsive to public sentiment, makes provision for the surveys and afterwards provides the money to prosecute the work on the project adopted.

Of course, much remains to be done ere our commercial needs are completely served. This is a great work and to its accomplishment our energies should be directed, for back of it is a sentiment, nation-wide in its extent, which will brook no trifling and tolerate no unnecessary delay on the part of those who legislate for the country.

IN THE MINNESOTA NATIONAL FOREST, AT THE HEADWATERS OF THE MISSISSIPPI

FORESTRY, A FUNDAMENTAL INDUSTRY

By GIFFORD PINCHOT

GIFFORD PINCHOT has been connected with possibly more governmental commissions appointed to investigate scientific questions than any other man in public life today. Having studied forestry in France, Germany, Switzerland and Austria, he began the first systematic forest work undertaken in this country at Biltmore, N. C., in 1892, and in 1898 became the head of the present Forest Service. Mr. Pinchot resigned from the Forest Service in 1910 to prosecute with even greater vigor the campaign for forest conservation and its co-related questions.

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FOUR-FIFTHS of the timber in the United States is in private hands. Its preservation depends absolutely upon what the owners choose to do with it. The owner of any part of it may allow his trees to stand uncut; or he may cut them under the prevailing methods of destructive lumbering, or he may consider his timber land as a permanent factory of wood, and apply the principles of forestry. Yet less than two per cent. of the privately held timber lands of the United States are now being conservatively handled. With the threat of a timber famine so clearly before us, we are treating four-fifths of our timber in the way best calculated to bring on that famine as quickly as possible and in the most serious form.

It is not altogether the fault of private timber land owners that they do not practise forestry. To practice forestry is to engage in a manufacturing business, the product of which is wood. No manufacturing business can succeed unless the product will bring more in the market than it costs to produce. In the United States now, the enormous accumulation of raw material, that is, standing timber, which cost us nothing to grow in the first place, is the chief reason why the finished product (lumber, etc.) sells for less than it would cost to grow, harvest and manufacture.

We use in this country 450 feet of lumber a year per inhabitant, as against about 60 feet in Europe. We cut enough lumber every year to make a pile as high as the Singer Building in New York and to cover something like 125 acres, and it is worth over one billion dollars. It is our fourth great industry, but it is far more than our fourth great industry. It is the industry upon which, in a very real sense, every other industry reposes. The man who owns a forest, because of the important relation of timber to all other industries, is a public servant. This resource, just as truly as printing is the art preservative of all arts, is the industry preservative of all other industries, and upon what we do with it depends the prosperity of all the other industries of our country.

Forestry, like any other industry, must become financially attractive before business men will take it up. There must be a reasonable security against forest fires. The present great danger that the investment may go up in smoke, seriously reduces the attractiveness of a long-time investment in growing wood. There must be reasonable taxation, under which there will be a fair chance to make the business pay. The land upon which the trees grow should be taxed annually, but the growing crop itself should be taxed only when it is ripe for cutting. Other crops, like corn, pay but one tax before harvest. Under present methods of taxation, the timber crop may pay fifty or one hundred

Since we must have lumber, it is clear that the duty to surround the industry of growing wood with such conditions as will make it attractive, rests squarely upon the people of the United States. The penalty for shirking this duty is a famine of one of

[illegible] upon which [illegible] coal, iron and wood. [illegible] interstate concentration of [illegible] ownership has made clear the [illegible] nation to interfere for the protection of the legitimate interests of us all, [illegible] included. Since the nation owns but a small fraction of the standing timber, and since the wise handling of all of that timber is essential for the future welfare of the country, there remains nothing for the people to do but to accept over the forests within the boundaries of each state. But the problem of the forests, like the problems of the streams, is by its very nature an interstate affair. It may take long to work it out, but before we are through with it the regulation of the lumber industry in the interest of the public welfare must be and will be accomplished mainly by the nation itself.

There are, then, two principal things to be done. First, the states and the nation must improve the conditions which now

EROSION OF UNWISELY CLEARED SLOPE, WESTERN NORTH CAROLINA

the situation and regulate the handling of private forest land.

There is nothing revolutionary in such a doctrine. Switzerland and France have long ago adopted it. There is obviously no more reason why an individual in the United States should be allowed to handle his own forests in a way to injure the public welfare, than why he should be allowed to use his own property in a city so as to endanger the public health.

I am far from having any quarrel with the fullest exercise of state sovereignty surround and retard the practice of forestry by private owners. Second, the destruction of our forests by the private owners of timber lands must be stopped. I anticipate with confidence that the lumbermen will give their powerful help in the task, but whether they do or not, the problem is far larger than anything except the nation itself, and the general welfare must control.

The forests supply not only wood but water as well, and one of their most useful functions is the control of streams. Since

THE FOREST RANGER AT WORK

the beginning of this country we have spent $500,000,000 on our streams, vastly the greater part of it within the last fifty years, and our streams today are less navigable than they were fifty years ago. In other words, this tremendous natural resource, which has within it the power to regulate and control rates of transportation of all kinds; which gives cheaper freight rates than any other agent; which by its use as waterpower takes the place of our vanishing coal fields, of our iron ores, by furnishing water transportation upon which the prosperity of our cities depends; and which has made rich the whole barren stretches of the desert West, has been neglected, and we have not come to realize it as our most valuable asset. Now the forest has as its second great function the control of our streams, and that is the thing we have been overlooking. Forestry seems to have been left out, and forestry is the one and only solution for the whole problem.

FIRE LANE AFTER SEVERAL ANNUAL MOWINGS, CLINTON, MASS.

A GLANCE AT THE RICHEST VALLEY IN THE WORLD

By BENJAMIN G. HUMPHREYS, *M. C.*

OVERFLOWING abundance and overwhelming disaster, prosperity and poverty, life and death, tragedy and humor are strangely mingled in this brief article. The problem is both local and national, and it is one for which a solution must be found, if it be not already known. Congressman Humphreys presents a limited panorama of the Mississippi Valley. He is an entertaining writer and a speaker of great force. What he says is well worth attention. He has represented the Third Mississippi District since 1903.

ROLLINS, the great historian, says that it is glory enough for Philip of Macedon that he be known in history as the "Father of Alexander the Great." In like spirit, may not the Mississippi River claim recognition among the rivers of the earth when it can point to the Ohio and Missouri as its tributaries?

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Consider one of these, the Ohio, for instance. There are only a few rivers on this earth which actually float a tonnage as large as the Ohio River; and fewer still which serve the commercial needs of so rich and prosperous a valley.

The commission appointed a few years ago to investigate the reservoirs on the tributaries above Pittsburgh, known as the Pittsburgh Flood Commission, stated rather casually in their report that the flood of 1907 destroyed property in the Ohio River Valley, alone, which they estimated at $100,000,000. Think of a single valley, a valley on one of our tributary streams, where one flood destroys $100,000,000 in property values, with really no serious or permanent interference with the industrial development or the commercial activities of the people.

When the Iron Chancellor demanded as the price of peace at the end of the Franco-Prussian War that France should pay a war indemnity of a billion dollars, all the world stood aghast at what was believed to be the death-blow to that great nation. Today a spring flood on the Ohio River lays one tenth that sum as tribute upon the people of this single valley, and not a wheel stops turning nor a furnace fire dies. There were only a limited number of our people outside that valley who knew at the time what this flood was up to, and they forgot about it as soon as the headline artist turned his attention to another theme.

We are spending, or about to spend, some sixty million dollars to secure a nine-foot depth all the way from Pittsburgh to Cairo in order that the millions of tons of raw material and manufactures originating in this valley may find reasonable transportation facilities to the markets. The tonnage which originates on the Ohio River is so great that an exact statement of its total is sure to challenge belief. The tonnage created in the Pittsburgh district, alone, exceeds the sum originating at any other three places in the world combined.

It will require sixty million dollars to complete the improvement of the Ohio River from Pittsburgh to Cairo, a distance of a thousand miles. The Manchester Ship Canal in England which cost seventy-five million dollars, is only thirty-five miles long and its annual commerce is less than three million tons. The Clyde was only fifteen inches deep, but at the cost of seventy million dollars it was deepened so as to admit ships from the sea and Glasgow became the second port of Europe.

Pittsburgh, alone, originates more tonnage than Manchester and Glasgow combined, and the improvement of the Ohio River will help not only Pittsburgh, but will give a thousand miles of navigation through one of the world's busiest valleys. Last year, the tonnage of the Ohio River

was about eleven millions, about five times greater than the tonnage of the Manchester Canal.

A few years ago I saw one boat come out of the Ohio, when the rains had given sufficient depth for temporary navigation, towing fifty-eight thousand tons of coal. It would have required fifty locomotives, pulling nineteen hundred cars, to have hauled that load.

No wonder the people of that valley are impatient for the great work of improving this river to be pushed with all possible speed to completion.

MR. HILL AND HIS CLOCK

Mr. J. J. Hill, the great railroad magnate, and withal a most interesting and farseeing statesman, declared some years ago that the "clock had struck" for the Upper Mississippi, by which term we designate that reach of the river above the mouth of the Missouri. Congress refused to accept this diagnosis—or maybe I should say prognosis—at any rate, we had not heard the clock strike and, as so many interests were to be affected thereby, we demanded strict proof.

To take issue with Mr. Hill on the efficiency of any transportation facility requires some assurance, and so Congress set about to investigate the question critically before adopting the more ambitious project then pending for the improvement of the river. Fortunately, the proof seemed to be ample and convincing, and the Upper Mississippi is now under improvement for a six-foot channel.

How was Congress led to this conclusion? Was it proof of politics? Was it to build up commerce or build up fences? Permit me to say this by way of preamble, or prelude, or prologue as you prefer:

I have served on the Committee on Rivers and Harbors for ten years, under Republican and Democratic rule, and I have never seen that Committee include any river and harbor project in their bill as a matter of political favoritism or expediency, or as the result of legislative log-rolling. Every project must be approved and recommended by the Board of Engineers of the United States Army before the Committee will pass it. The Committee must be satisfied that the project is worth the outlay. There is but one way to persuade their will in such matters, and that is to convince their judgment. And now, having tossed this bouquet to my colleagues of this really great committee, let me proceed.

Some years ago I heard the distinguished gentleman from Minnesota, Ex-Governor Lind, on the floor of the House, ask his colleague, Mr. Davis, "Where will your farmer neighbors and mine land when 'Pillsbury's Best' has ceased to stand for what it now stands for?" And it was agreed that whatever might seriously impair the world market for "Pillsbury's Best" would work disaster to the wheat farmers of Minnesota. All of which is preliminary to the suggestion that this Pillsbury must evidently be a man of some consequence, as we all in fact know him to have been. In testifying before the special committee which was considering the Mississippi River, Mr. Pillsbury said this (and a good many others said the same thing and many other things in addition, but for a "short story" this must suffice):

"We consider the presence of the Mississippi River, and the fact that it is kept in a navigable condition, the great regulator of railroad rates; that the benefits should not be measured by the tonnage as much as by the possibilities of sending the freight by water.

"The amount of flour shipped out of Minneapolis is something enormous (thirteen million barrels). A great deal of this would go by the Mississippi River, unless the railroads maintained the cheapest rate known in the country almost."

Mr. Nelson: "And the Mississippi being there keeps the rates down?"

Mr. Pillsbury: "The fact of the Mississippi being there prevents them from making any combination to maintain excessive rates. The necessity is not so much the amount carried by the steamers as the amount that can be carried."

Railroad rates from the Atlantic seaboard to the Dakotas and the extreme Northwest are made on combinations through St. Paul. That is, the rate to St. Paul, plus the rate thence west. The rate to and from St. Paul, however, is materially lowered by reason of the competition by water routes from Duluth through the lakes. And so it is that the lakes, from Duluth east to the ocean, and the river,

from St. Paul south to the Gulf, regulate railroad rates to cities and shippers many hundred miles from either.

How the Devil Showed Missouri

No river in the world has such a tributary as the Missouri. Winding for 2,400 miles through the greatest granary in the world, draining some dozen states, where corn and wheat, hog and hominy enough are produced to fatten the rest of us, it is in many respects the most useful and neglected river of the continent. Sergeant Prentiss, the great Whig orator, once declared in a burst of partisanship that when the Almighty created the Mississippi River and the Democratic party he devoted them both to the service of the Devil, and he admitted facetiously "that both had kept the faith."

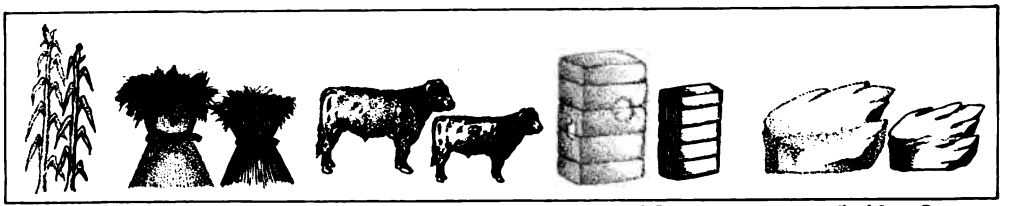
However some of us may resent this thrust at the Democratic party, the truth is that the Missouri River, which is in fact the Mississippi, has been permitted to so disport itself as to justify no complaint from the Prince of Darkness. It has literally wandered about over the face of the earth like the scriptural lion, seeking whom it might devour.

If you will look at the map, you will see how the Mississippi has brought down acres and acres of soil which, by successive deposits, has gradually encroached upon the sea until many miles of now beautiful farms are stretched along its lower reaches. Engineers tell us that the amount of sediment borne by the Mississippi at its mouth is exactly equal to the amount carried by the Missouri at its mouth; and this is just another way of saying that all the rich plantations along the river below New Orleans, and all those vast swamps of cypress and jungle, caved into the Missouri River in the years gone by and were transported to the sea.

What this toll has cost the farmers of Iowa and Nebraska, and their neighbors, cannot be measured, but it has been tremendous. Mr. S. Waters Fox, a civil engineer, who for twenty-five years was employed by the Government on the Missouri River work, places it at 10,490 acres annually in the 807 miles from its mouth to Sioux City.

Still it is argued that this isn't any of Uncle Sam's business at last. But it is. Listen to this! There is but one way to improve the Missouri for navigation, only one way. All of the engineers are agreed on that. Revet the banks and so prevent further caving. What will this cost? Twenty millions from the mouth to Kansas City. Is the game worth the candle?

OF THE ENTIRE OUTPUT OF THE UNITED STATES



85% of Corn 75% of Wheat 70% of Live Stock 70% of Cotton 70% of Iron Ore

How Much Is Fifteen Billion Dollars

This is a great valley, this Mississippi Valley. There is nothing like it upon the earth. It equals in area the combined areas of Austria, Germany, Holland, France, Italy, Portugal, Spain, Norway and Great Britain. The annual value of its manufactures had, in 1910, reached the enormous total of seven-and-a-half billion dollars.

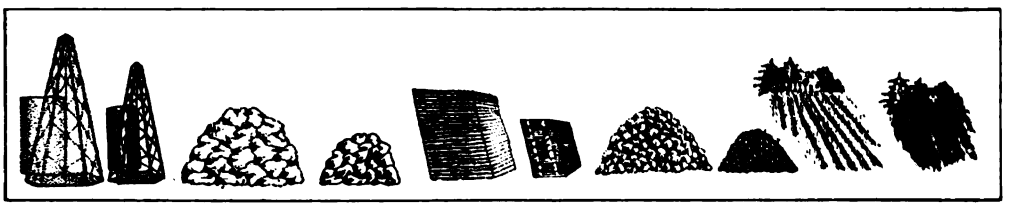
Too much to comprehend. We cannot take in just what that means. Let us speak in different terms. What is seven-and-a-half billion dollars? It would equal the total appropriations for the War and Navy Departments from 1861 to 1865, plus the appropriations for these departments in 1898 and 1899 (the period of the Spanish War), plus the appropriations which have been made for all the rivers and all the harbors from the beginning of the Government to date, plus the cost of

the Panama Canal; and even then we would have a balance remaining large enough to pay off the national debt. This is what seven-and-a-half billion dollars amounts to.

But in addition to this, this valley produces 85 % of the corn raised in the United States; 75 % of the wheat; 70 % of the live stock; 70 % of the cotton; 70 % of the iron ore; 70 % of the petroleum; 50 % of the copper; 50 % of the lumber; 50 % of the coal and has 70 % of the farm areas and farm values of this country. The total value of all the products of this valley is fifteen billion dollars annually.

Every pound of this fifteen billion dollars' worth of products is affected by the transportation facilities at hand. There

THE MISSISSIPPI VALLEY PRODUCES



70% of Petroleum 50% of Copper 50% of Lumber 50% of Coal 70% of Farm Areas

are 150,000 miles of railroads in this valley which are trying to transport these products and bring into the valley whatever is needed from the rest of the world in exchange. Can they do it? No, they cannot, but suppose they could, suppose they do.

Mr. H. G. Wilson, for many years an official in the freight traffic department of the Kansas City, Fort Scott & Memphis Railroad, is recognized as one of our most efficient authorities on the subject of transportation rates. In an address before the Rivers and Harbors Committee of Congress two years ago, he stated that railroad rates from the territory known as "seaboard territory" (lying east of Pittsburgh and Buffalo) to points as far west as Galena, Kansas and Denver, Colorado, were all affected by the water transportation of the Mississippi River, and that five million tons of traffic across Missouri points into the southwest were materially lowered by the potential competition furnished by the physical presence of the Missouri River.

After a good deal of cross-questioning on all related subjects, the late Senator Frye, then Chairman of the Commerce Committee, brought Mr. Wilson directly to the point:

The Chairman: "Well, now, what about the Missouri River? How is that going to help you out? What do you want done about that?"

Mr. Wilson: "As far as the commercial situation is concerned, a transportation line operated on the Missouri River, a waterway carrier being effective, having sufficient capacity to carry—and in fact carrying—a sufficient quantity of tonnage to make that tonnage noticeable to the rail carriers, will exert an influence on the rail lines, forcing them to meet the competition so established, which will result in a lowering of the freight rates, not only to and from Kansas City and the other Southwestern Missouri River points, but to and from all of the trade territories in the Southwest – Kansas, Oklahoma, Texas, Denver, Colorado, New Mexico, Arizona and Nebraska. All of this territory, all of these states, will be benefited by a reduction in the freight rates."

I believe he answered the question.

THE FATHER OF WATERS AND THE PASSOVER

From Cairo, south, the Mississippi traverses the most fertile valley in the world. I use the word "traverses" advisedly. Mr. Webster says traverse means "to cross, to pass over," and that is what this big river does. Last spring it "passed over" some 14,000 square miles of the most productive lands in the world. At one time during this passover the Secretary of War was furnishing food and shelter to 161,000 of our citizens who had been made homeless and helpless by the

FLOOD TIME IN THE MISSISSIPPI VALLEY

flood. How many millions of property values were lost and destroyed nobody knows, and nobody ever will know.

But the loss cannot be measured that way. There were many lives lost, many homes destroyed, many hopes turned to despair. If it were not for its marvelously productive soil, which renders its recuperative powers, therefore, beyond compare, this valley would be abandoned to the wilderness and its denizens. But it is blessed with a gentle climate, the rains fall in season and the sunshine warms into fruitage its abundant crops of corn and cane, and whitens its fields of cotton into waving beauty.

There are twenty-six thousand square miles of these lowlands which, expressed in different terms, means an area larger than Maryland, Delaware, Connecticut, Rhode Island and Massachusetts combined. All of the lower Mississippi is not lowland, subject to overflow, not by any means. There are broad acres of upland and towns and cities, too, high above such danger. Memphis, Vicksburg, Natchez, Baton Rouge are far beyond the reach of the floods, but in this I speak only of the lowlands.

WHEN THE LAND LUBBER GOES TO SEA

It would be a foolish thing to provide nine feet in the Ohio, and six feet in the upper Mississippi and twelve feet in the Missouri, unless we are to secure and maintain a navigable depth in the Mississippi below their confluence. The present adopted project is for nine feet over the bars, but there are many who are insisting upon "Fourteen Feet Through the Valley." There is but one way to get either. Secure the banks against erosion and confine the waters at all seasons to the channel.

When General Suter, now retired, was a lieutenant-colonel in the Engineer Corps of the Army, he was set to work on this great problem, and after long and diligent study and experiment he reported, as far back as 1890, that the river could not be improved without levees. I quote the Record:

"Senator Gibson: You stated a moment ago, in reply to a question by the Chairman, that if you were improving the Mississippi River, even if it were running through a wilderness, if the country through which it ran were not peopled, you would still build levees on the banks.

"Lieutenant-Colonel Suter: Yes, sir.

"Senator Gibson: Why do you hold that opinion?

"Lieutenant-Colonel Suter: Because I consider that the improvement of the stream for navigable purposes without it is impossible."

But it does not run through a wilderness. The riparian owners of the lower valley have been busy conjuring up different systems of taxation whereby money enough could be taken from their fields to build these levees high enough and strong enough to prevent further disaster from recurring overflows. In this way they have raised and put into these levees some sixty odd million dollars since the close of the Civil War, which left the old levee system totally destroyed. But all through the upper valley there has been a most rapidly advancing civilization. The peoples of all the world have been attracted there, and the barren prairies and the trackless forests have both been subdued by the energies of man and brought under productive cultivation.

Under the stimulus of scientific study and intelligent experiment the drainage of vast areas has been undertaken. The bends have been cut off in the natural channels, main canals have been dug, the farm undertiled, and now, when the rain falls, instead of lagging superfluous in innumerable slashes and undrained swamps serving as natural reservoirs, it rushes into the tributaries and down the great river, bringing destruction to the farmers of the lower valley. The greatest of all floods, for instance, was the one just passed—1912. Mr. Moore, Chief of the Weather Bureau at Washington, says that this flood was caused by "six rain storms in

the upper valley which fell between March 10 and April 2, a period of three weeks."

These floods thus precipitated upon the lower valley wash away the banks, tumble the levees into the river and verify all that Prentiss said about the river.

Colonel Leach of the Engineer Corps of the Army said before the Senate Committee:

"I may say, generally, with regard to the history of the levee system, that over three-fourths, probably, of the entire sum of money expended by the states in the last ten or fifteen years in the construction of levees would have been saved if the United States had prevented the banks from caving."

Of course the planter in the lower valley does not wish to see the farmer in the upper valley injured by the surplus water which can be carried off by drainage, nor does the farmer in the upper valley at all relish the idea of destroying his brother further down the river by turning this surplus water upon him too precipitately. What they both most earnestly desire is that out of the common treasury of all the people the Congress shall appropriate money enough to so improve the river, which is the nation's drainage ditch, that this surplus water may pass out to sea between permanent leveed banks.

To complete the levee system so as to bring it up to the grade and section believed to be strong enough to do this will require about thirty-five million dollars. There are just about thirty-five million people in the whole valley and they would be very willing to contribute their per capita, 35 cents, annually, for the next three years and that would settle it.

There are fifteen thousand miles of tributaries of this great stream, but I have touched only on those which are most prominent now in the public mind, leaving ten thousand miles of the Arkansas, the Red, the Yazoo, the White and others of less tonnage and national concern.

I fear I have already overstepped the reasonable limitations of a short story. For this I must plead as excuse a lack of time to bring this article to a shorter measure.

Senator Morgan, of Alabama, was once asked how long he could speak on a certain subject. "If I had time to thoroughly digest the subject and prepare my address, I think I could talk for three days," he replied.

"But if you had no such time for preparation, how long could you speak?"

"Oh, indefinitely."

SANTA CLAUS STUCK ON A SAND-BAR

AN EFFECTIVE EMPTY STOCKING ARGUMENT BEFORE THE RIVERS AND HARBORS COMMITTEE, AS RELATED BY CONGRESSMAN HUMPHREYS

"The improvement of our waterways is a matter of business, and appeals to the pockets of men. In dealing with it we are perforce confined largely to a matter of very dry figures. But even in this practical realm, we sometimes emulate Mr. Weller and drop into poetry. A year or two ago we (Rivers and Harbors Committee of the House) were hearing some gentlemen from the valley of the Cumberland, who were anxious to have the project for the improvement of that river pushed to completion. We were listening to the stories of the wealth, latent wealth, in that most wonderfully beautiful and God-favored valley. Somebody said, somewhere, speaking of such a valley, that it was a marvelously possible valley. Well, we were hearing that the Cumberland Valley was marvelously possible when, as I suggested before, we dropped into poetry. Mr. Slaughter was talking, and was in the act of bowing himself out. 'May I make just one further observation?' he asked, almost apologetically. 'Their goods go up the river there, and to give you a pathetic incident as an illustration of the circumstances there, this last Christmas there was no water in the river, and the Christmas presents—the toys which were going up the river to the children all up in that country—were lying on the banks of the river at Nashville, and could not be gotten to them. Imagine what that means!' We did. Every man of us. And in those imaginings we saw the gray dawn of Christmas climb the mountains of East Tennessee and we heard a thousand—yes, ten thousand—little feet slip out of bed and patter across the floor to the hearthstone to see what old Santa had brought. And then we saw the little faces grow pale as they fled from the gaunt spectre of an empty stocking to dry their tears in the bosom of a heart-broken woman. Santa Claus was stuck on a sand-bar! When the next River and Harbor Bill was reported, there was provision for the Upper Cumberland."—*B. G. Humphreys in the Inter-Nation.*

HIGHWAYS TWIN TO WATERWAYS

By J. E. PENNYBACKER, JR.

MR. PENNYBACKER is Secretary of the American Association for Highway Improvement, Editor of the Official "Good Roads Year Book of the United States," and an authority on the subject of road development. In this article he tells of the problems of roads "the first link in the Transportation Trinity," and his conclusions will interest you.

WHILE the effort of improving the main roads of the United States has always been distinct from the effort to deepen the waterways, there is no doubt that the two movements are part of the same economic problem. The idea of the men who are working for a better system of highways, like that of the men who are working for deeper waterways, is to improve the transportation facilities of the United States. It is conceded that transportation by waterways is much cheaper than transportation by way of the earthen roads.

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The cost of transportation per mile on an average country road is about 23 cents. When it is realized that the cost of transportation drops to 11½ cents along an improved highway, the great object of the American Association for Highway Improvement and its allied organizations needs no defensive argument. Improved highways will cut the cost of transportation in half, an object certainly worthy of the best efforts of the brains now engaged in the movement.

The cost of railroad transportation per ton per mile is three-quarters of a cent, while on canals and rivers it is from one-third to one-seventh of a cent, and on the ocean three-tenths of a cent. For one dollar it is, therefore, possible to haul one ton about 4 miles by common road, 8 miles by a good road, 130 miles by rail, 300 to 700 miles by canal or inland waterway, and about 3,300 miles on the ocean. In other words, it costs the farmer about $1.25 more to haul a ton of wheat over the average road from the farm to station, a distance of 9.4 miles—average for the United States—than to ship it from New York to Liverpool, a distance of 3,100 miles.

The insufficient road system and the insufficient waterway system are twin problems in the United States. As a matter of fact, the waterways and roads are closely related to all other fundamental problems. Unless there are good roads over which the farmer may haul his crops in all seasons of the year, the railroads must stand virtually idle at certain periods. And unless there are roads by which the farmer may gain access to the piers and wharves of shipping points the freight carriers of the water routes must suffer.

The interior of the country possesses 50,000 miles of waterways, only half of which are navigable. The total mileage of all public roads of the United States is 2,199,645, while the total mileage of all improved public roads is only 190,476. It will thus be seen that the percentage of all roads improved is but 8.66, while it is agreed that 20% will have to be improved to bring about a state of real efficiency.

The trouble with the United States, it is clear, has been due to the mushroom growth of the railroads. The railroads have pushed their way through all sections of the country so fast that they have outdistanced the earthen roads, and the result is that the development of farm lands has not kept pace with the development of the country itself.

In a recent speech before the Atlantic Deeper Waterways Association, John F. Stevens, vice-president of the New York, New Haven and Hartford Railroad, said:

"It must be remembered that within

A LOAD FOR TWO HORSES ON THE MACADAM ROADS NEAR CHARLOTTE, N. C. 12 BALES OF COTTON, 6,000 POUNDS

sixty years—about one hardy business lifetime—our railroad main lines have risen from nothing to 225,000 miles, over which traffic, both freight and passenger, is carried at speeds equal to, and at rates, generally speaking, lower than in most countries where the cost of labor and material is much less than with us, and where density of tonnage is far greater. But a time has now come, has been with us for some years, when the railways considered as a unit are not capable of handling satisfactorily the interchange business of the country, even supplemented as they are to a certain extent by water-lines. And to such lines they should bear the relation of allies instead of opponents, if they now do not."

The farmer must get his crops to market. The railroad does not go to the farmer, so, like Mahomet and the mountain, the farmer must go to the railroad. The only way he can get to the railroad at a minimum cost of hauling is by a good road. If the railroad does not go to him, and there are no adequate roads or waterways, the country round about him must go to waste.

Without wagon roads the value of waterways as avenues of transportation would be exceedingly limited and that of railways even more so. Conversely, the practical value of the wagon road would shrink at an alarming rate if the waterway should be eliminated. It must be quite evident that in this "Trinity of Transportation," as it has been well epitomized, there is an irresistible interdependence.

The traffic on the more than 2,000,000 miles of public road, comprising our primary means of transportation, is yet in its infancy. The splendid road system of France carries a traffic of more than one and one-third times the railroad traffic.

The reason for the exceptionally heavy traffic on the French roads is the low cost of hauling, averaging lower than ten cents per ton per mile, as compared with an average of about twenty-three cents per ton per mile in the United States. When, by adequate improvement of the public roads, the cost of hauling in this country is lowered to a marked degree, production will be stimulated, population will be better distributed and the cost of living will, of necessity, be lowered, because waste of time and energy, now imposed upon traffic by bad roads, will no longer exist.

Two lines exist along which saving in cost of hauling on the public road may be brought about. One is the improvement of the roadway itself, and the other is in the motive power for hauling. The advent and remarkable improvement of motor vehicles make possible the lowering of the rate of hauling to a basis almost commonplace with railway transportation rates. Experiments in California recently yielded a rate per ton mile of about two cents. This rate could not be expected to be maintained under average conditions, but is indicative of the possibilities along this line.

The important fact which must not be overlooked, however, is that the use of the motor vehicle is dependent largely upon the improvement of the roadway. The possible saving in the cost of hauling may, therefore, be summed up as follows: A rate of from twelve cents to fourteen cents. per ton mile, as compared with twenty-three cents per ton mile through the improvement of the roadway, using for

THE COST OF HAULING ON THIS TYPE OF ROAD IS SO GREAT AS TO CONSUME ALL OF THE PROFIT

traffic purposes animal motive power; a rate of from five cents to ten cents per ton mile as compared with twenty-three cents per ton mile through the improvement of the roadway and the use of motor trucks.

The farmer, in order to meet the wares of his competitor, must first deduct the cost of the production from the selling price, and must depend upon this margin, less the cost of transportation, for his profit. If the cost of hauling is so great as to exceed the margin, his production must cease or be restricted to local requirements.

About fifteen years ago corn was burned for fuel in the Mississippi Valley, because the cost of transporting it to the market was greater than the margin between the cost of production and the selling price. Today, in spite of the enormous crops of every kind of agricultural products, the price of these products to the consumer is about 15 % higher than last year, and this in spite of the fact that reports are continually received of fruit and vegetables rotting in orchards and gardens, because the cost of transportation was greater than the value of the product. The term "over production" does not apply in this case. It should be expressed as "under consumption," due to unequal distribution.

When the railways of America, already constructed, are made accessible to every farm, and when the entire 50,000 miles of inland waterways are made use of by proper improvement and a system of roads as feeders, production should be so great as to satisfy our economic requirements in the most satisfactory manner by lowering the cost of living without sacrifice to the profits of the producer.

The transformation brought about by the substitution of a good road for a bad road in a community is little short of marvelous. First, the value of every acre of land along the road increases. I have never known the increase to be less than 20 %, and I have known it to be as high as 900 %. This increase is due to the fact that the farm can be worked at a profit, and that it is, so to speak, picked up and brought many miles nearer the market.

In Spottsylvania County, Virginia, a bond issue of $100,000 was expended for road improvement two years ago. The actual sales of farms along one of the roads improved netted a profit of more than the entire bond issue. The second effect of good roads upon the community is shown in the increase of agricultural activities; waste lands are brought under cultivation; better methods of farming are introduced; labor-saving devices are installed, and instead of importing from other sections of the country farm products for home consumption, the balance of trade soon turns the other way. When a team hauls 4,000 pounds instead of 1,000 pounds; when the bills for repair of wagons and harness and for the upkeep of teams are cut in half, and when hauling can be done every day of the year, the explanation of this increased production is apparent.

The next effect is that of home-building. People leave the isolated under-productive sections and move to the good road, where they are not only more prosperous but have neighbors, and have access to towns and all of the comforts and conveniences of civilization. The effect of the road upon the school is soon apparent. The attendance is better, and after a comprehensive system of roads has been introduced, the little one-room log school-houses are soon supplanted by graded schools, without any increase in expense, because fewer and better schools are no more expensive than many and poorer schools.

A year or so ago a traveler in discussing the good roads question with a local physician in a Georgia town was informed that the rate charged by physicians for country visits was twice as high over the bad road leading to the west of the town as over the good road leading to the east, which meant that families living on the bad road frequently paid in doctors' bills in excess charges over the regular medical fees many times the amount of their road taxes.

The trouble with the road situation in the United States is not so much inadequate appropriations, as unwise expenditures. Last year the total amount expended on roads and bridges in this country reached an aggregate of $150,000,000. Conservative authorities have figured about $40,000,000 of this sum to be preventable waste. The reason for this condition is, first, that the road laws of most of the States do not require skilled supervision of road work; second, a multitude of unnecessary officials are intrusted

"THE ADVENT AND REMARKABLE IMPROVEMENT OF MOTOR VEHICLES MAKE POSSIBLE THE LOWERING OF THE RATE OF HAULING TO A BASIS ALMOST COMMONPLACE WITH RAILWAY TRANSPORTATION RATES."

with the control of the public roads, and the result is that all are bosses and few are workers. A third source of waste is in the system of accounting practised in most of the States.

Cost of the upkeep of a road is scarcely ever thought of, the result being that the various units which go to make up a road, such as cost of excavation per cubic yard, of crushing stone per cubic yard, of sprinkling per square yard, of spreading stone per square yard, etc., are almost totally lacking. In Missouri some years ago a newly appointed county engineer found that under the old system the road overseer had contracted for $125 worth of lumber to build a small bridge. He cancelled the order, and put in a concrete culvert for $25.

This saving applied to a bond issue running for a period of twenty years would constitute an amount of striking proportions. Bonds should be issued only after careful investigation and upon estimates by capable engineers, showing the specific roads to be improved, the mileage, the cost, the materials available the traffic actual and potential, the tax levy necessary and the method of bond issue most advantageous to the county or community.

The American Association for Highway Improvement, an organization composed of nearly 1,500 of America's leading citizens, with headquarters in Washington, D. C., is striving earnestly to promote the safe and sane improvement of the public roads, and is constantly urging as a means to this end reforms in road laws and in systems of administration which will eliminate the hindrances which now stand in the way of road improvement. Hon. Logan Waller Page, Director of the United States Office of Public Roads, is President of the Association; Mr. W. C. Brown, President of the New York Central lines, is Vice-President; Mr. W. W. Finley, President of the Southern Railway Company, is Chairman of the Executive Committee; Hon. James S. Harlan, of the Interstate Commerce Commission, is Chairman of the Board of Directors; and Hon. Lee McClung, Treasurer of the United States, is Treasurer of the Association.

THE HOUSTON SHIP CHANNEL

By THOMAS HENRY BALL

HOW a "Navigation District"—composed of the City of Houston and a portion of Harris County, in which Houston is located—went into partnership with "Uncle Sam" to build a ship channel 50 miles long and 25 feet deep, at a cost of $2,500,000, is interestingly told in the article which follows. Thomas Henry Ball, the writer of the article, represented the Eighth Texas District in Congress for eight years.

THIS waterway project contemplates a channel 25 feet deep and 50 miles long, running from Galveston harbor to a point within the city limits of Houston, where it terminates in a turning basin 800 feet in diameter.

For one-half its length the channel runs through Galveston Bay, and for the other through Buffalo Bayou. This portion of the channel is a landlocked harbor, giving safe shelter from storms, and, being an arm of the sea, it depends on tidewater and not on rainfall for its water supply.

A section of the 12-foot channel made under the project of 1871, which extends from the turning basin at Long Beach to the foot of Main Street in Houston, will be maintained for the use of light-draft boats. The new project for a depth of 25 feet was recommended and the first appropriation for the work was made in 1900. Within the next ten years $2,500,000 had been appropriated and expended, but the channel was only half completed.

The citizens of Houston and Harris County, being unwilling to wait upon the slow process of driblet appropriations, sent to Washington, in 1910, a committee representing the city, the county and all the commercial bodies, and proposed that, if Congress would authorize a contract for the completion of the work at a cost not to exceed $2,500,000, the County of Harris and the City of Houston would organize a Navigation District and issue bonds to provide half the amount needed.

Congress accepted this proposal to match dollars with the Government, which proved the confidence of the citizens of Houston in their own project, and, in the River and Harbor act of June 25, 1910, appropriated $300,000 and authorized a continuing contract for the completion of the work at a cost not to exceed $2,500,000, conditioned that the Harris County Ship Channel Navigation District should make provision for furnishing the sum of $1,250,000 and place to the credit of the Secretary of War in a United States depository the sum of $300,000.

Houston and Harris County complied with their part of the proposal, organized the district, issued the bonds, which were taken by the local banking institutions of Houston, made the required deposit, and satisfied the Secretary of War that the balance from the Navigation District had been provided. Thereupon a contract, calling for the completion of the work in about three years, was let for a total cost of $2,365,791.

When completed, this channel will be a great factor in the commerce of Texas and of the entire country. Houston is the largest railroad center in Texas, having seventeen railroads, which here meet the sea. The principal railway systems have acquired extensive facilities for terminals on the channel, and numbers of persons and corporations have purchased waterfrontage to meet the demands of existing commerce and the largely increased volume which is sure to come.

The City of Houston has 177 acres of land abutting on the turning basin, and has constructed slips and is erecting

THE YACHT "HORNET," FORMERLY OWNED BY PIERPONT MORGAN, IN THE TURNING BASIN—THE TERMINATION OF THE HOUSTON SHIP CHANNEL

wharves to accommodate shippers without charge. The city thus has an investment worth more than half a million dollars to guarantee users of the ship channel against excessive port and wharf charges, and it is expected that this progressive action upon the part of the city will compel railway companies to absorb all wharf charges.

At Harrisburg, two miles below the turning basin, extensive improvements are being made in the way of warehouses and cotton compresses which are now in use and capable of handling a large volume of business. In straightening the channel a number of cut-offs were made, and the bed of the old channel will form at such points valuable storage basins.

Twenty miles from Houston on the ship channel is the scene of the battle of San Jacinto, where the Texas troops under General Houston achieved a signal victory over the Mexican army led in person by General Santa Anna, which eventuated in freeing Texas from Mexican domination and its settled status as a republic, after-

BATTLEFIELD PARK—TWENTY MILES FROM HOUSTON ON THE SHIP CHANNEL—THE SCENE OF THE BATTLE OF SAN JACINTO

HOUSTON IS THE LARGEST INTERIOR COTTON PORT OF THE WORLD

wards to become the empire state of the Union. This historic spot is included in a tract of several hundred acres owned by the State of Texas and known as Battlefield Park.

Houston is the largest interior cotton port in the world and the ship channel, even in its uncompleted state, carries annually to deep water at Galveston for shipment about 500,000 bales of cotton. The tonnage now handled is valued at forty million dollars annually, which is only an indication of the great volume to come when the channel is ready for seagoing vessels drawing 25 feet of water. A greater depth is only a matter of digging and throwing out dirt, and the great and increasing demand for harbor facilities on the Gulf coast will insure additional depth when needed.

The Houston ship channel improvement is in no sense antagonistic to the great Gulf harbor at Galveston. The expenditure of many millions at Galveston by the National Government has been amply justified by the result. It is estimated that the saving to the grain growers of Kansas and Nebraska alone in one year after the completion of the Galveston project saved shippers more than the entire amount expended by the Government in securing deep water.

Just across from Galveston, on the main land, Texas City has built extensive terminals, docks and wharves and is handling a large commerce, served by a deep water channel from Texas City to Galveston harbor. At Bolivar, on the opposite main land, the Santa Fe Railway has constructed large terminal facilities, and added to the value of the Galveston harbor as a national improvement.

Thus, with Galveston harbor proper and the splendid facilities already existing there, the use of the Bolivar and Texas City facilities, in connection with the greater Galveston improvement to come; supplemented by the Houston Ship Channel which, after entering Buffalo Bayou, has 25 miles on either bank of opportunity for commercial facilities, we shall have on the Gulf coast to accommodate the vast commerce of Texas and the section west of the Mississippi River, harbor, dock, wharf and terminal facilities unequaled elsewhere in the United States, with the possible exception of the great harbor of New York.

SIDE LIGHTS ON MEN AND THINGS

AT THE HEAD OF THE NEWLY CREATED AND BIGGEST DEPARTMENT OF THE ARMY

By EDGAR

FROM a cadet at West Point to a major general of the staff in thirty-two years is "going some." But that is what Major General James B. Aleshire has achieved since his graduation from the Military Academy in 1880. And General Aleshire is now at the head of the newly-created and biggest department of the Army, to be known as "The Quartermaster Corps," comprising the Quartermaster's, the Subsistence and Pay Departments, and he will have associated with him as his assistants Brig. Gen. Henry G. Sharpe, now Commissary General, and Brig. Gen. Geo. R. Smith, now Paymaster General. This biggest department of the Army will disburse in 1914 eighty-five of the ninety-five millions appropriated for the maintenance of the Army, which is also "going some."

What a class that Class of '80 was, to be sure! From the time it entered the Army's alma mater in April, 1876, to the day of graduation, the Class of '80 made history for the institution and for itself.

It was "Hip! hip! hurrah, boys!" from reveille to taps, and the scraps and the hazings, the courts of inquiry, the demerits and the dismissals crowded fast on each other until rumor said that the Class of '80 would not be permitted to graduate.

But the Class of '80 did graduate and today it stands in the forefront of the classes in personnel and accepted ability. In addition to General Aleshire, Col. George W. Goethals, the builder of the Panama Canal, graduated second in the Class of '80. Others in this notable company are Brig. Gen. H. G. Sharpe, Col. Samuel W. Dunning of the Adjutant General's Department, Col. John L. Chamberlain of the Inspector General's Department, Capt. George Converse, retired, who lost an eye in his first Indian engagement; Charles E. Hewett, who resigned on graduation; Col. J. Y. F. Blake, who died a few years ago and one of the adventurous characters of the class, and two score or more splendid soldiers who have been bringing distinction to the institution on the banks of the Hudson, and incidentally to the uniforms they wear.

Major General James B. Aleshire was appointed to the Military Academy by Col. John L. Vance, then a representative in Congress from the Seventeenth Congressional District of Ohio, now president of the Ohio Valley Improvement Association and one of the directors of the National Rivers and Harbors Congress. General Aleshire was born in Gallipolis, Ohio, his father being interested in flouring mills, and it was in connection with his father's vocation that Aleshire learned the rudiments of business which have since proved of incalculable benefit to him.

Major General C. F. Humphrey, his immediate predecessor in the Quartermaster's Department, in asking for officers to assist him in the conduct of the Quartermaster's Department in China during the Boxer troubles, cabled to the War Department: "Want Aleshire and men like him," and Aleshire has made good in every branch of the Army since his salad days as a second lieutenant.

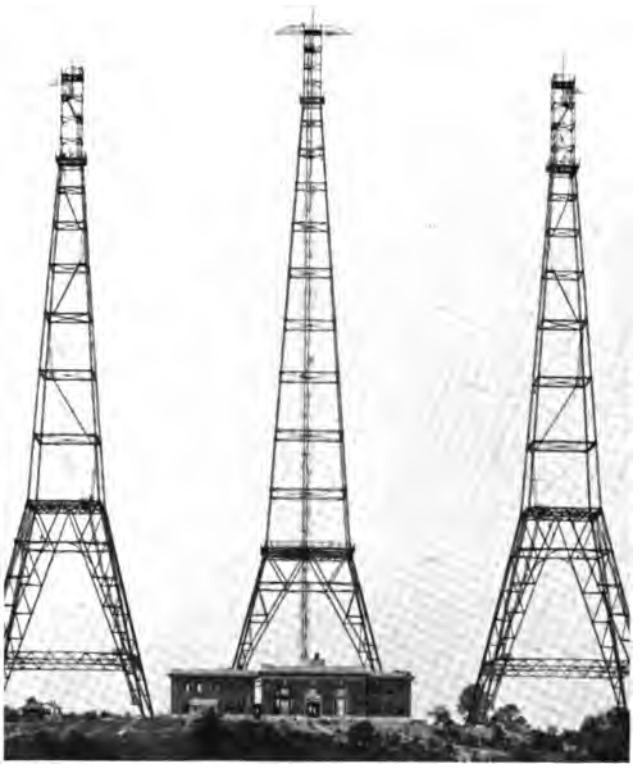
IN AND ABOUT WASHINGTON

C. SNYDER

"I'LL put a girdle 'round about the earth in forty minutes." And Puck meant every word he said, as he airily left Oberon's presence to go in search of the flower, "the price of which on sleeping eyelids laid" would enslave the world.

It is a far cry from the "girdle" with which Puck encompassed the globe to the wireless, which is the last word in radio-communication and which, it is believed, reached its highest development with the opening of the new radio station on the heights of Arlington, across the historic Potomac from the Nation's Capital.

This station, which has just been completed, and which cost in the neighborhood of $250,000, is the first of a chain of wireless plants which the United States Navy Department has in contemplation, and which is planned upon a more extensive scale then any similar sysem in existence or contemplated by any other nation.



WIRELESS STATION, ARLINGTON, VA.

These towers form important links in Uncle Sam's girdle around the world; the central tower is 600 ft. high. This station cost $250,000.

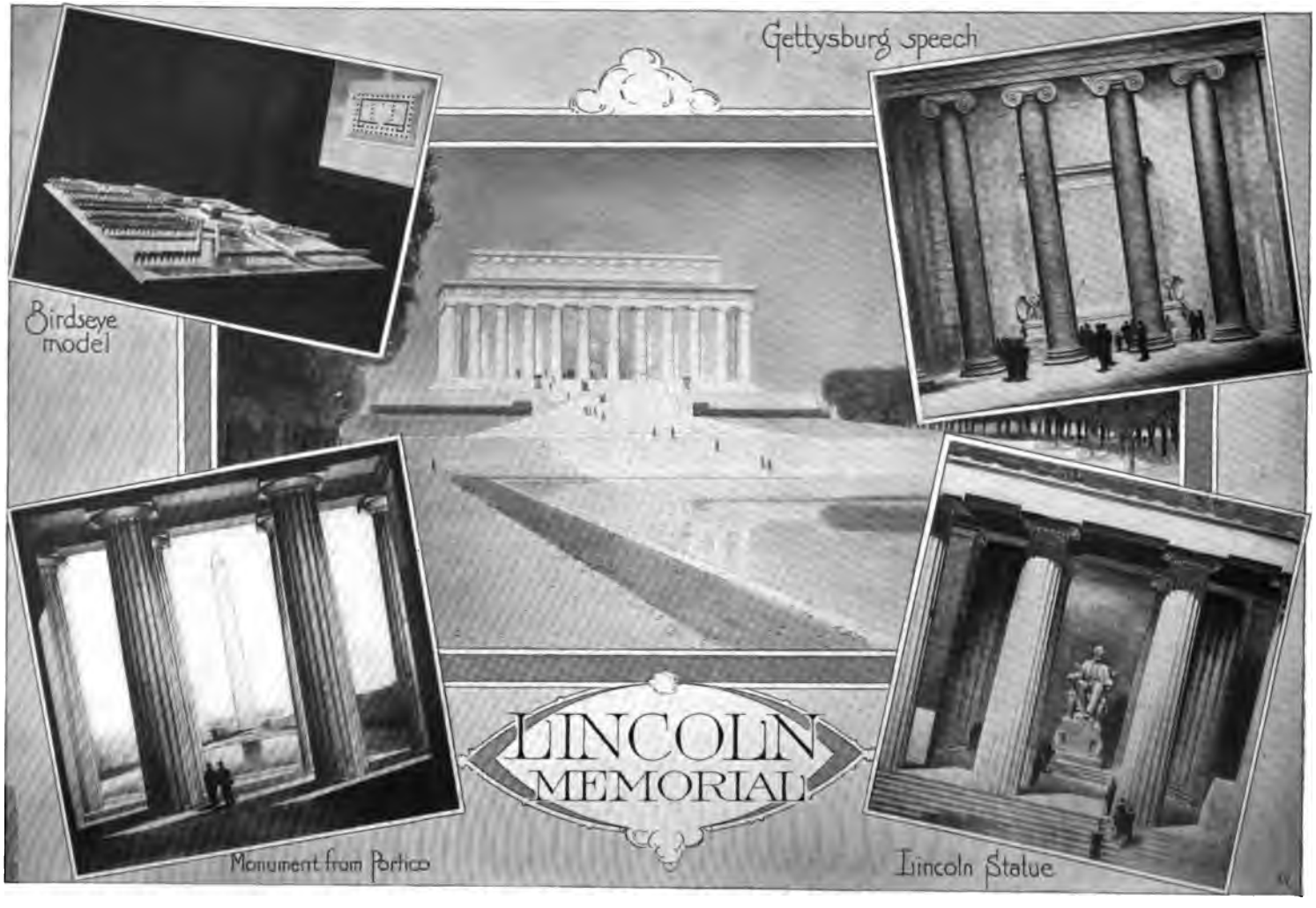
Two oceans and a continent will be embraced within the range of the contemplated chain, making it possible to communicate with naval vessels, whether near the African Coast or in Chinese waters, as readily as the telegraph brings the ships, lying in the roadstead off Old Point or off Provincetown, Mass., in touch with the powers in Washington.

The others to be built will be on the Panama Canal Zone; San Francisco, Cal.; Pearl Harbor, Hawaii; Tutuila Island in the Samoan group; Guam; and Luzon, Philippine Islands.

Each of these stations is planned to have a sending radius of 3,000 miles, although it is confidently believed by Rear Admiral Hutch I. Cone, Chief of the Bureau of Steam Engineering, that the sending radius will be considerably more.

The Arlington station consists of three steel towers arranged in the form of an isosceles triangle, with the powerhouse facing the tallest tower. At the apex of the triangle is a tower 600 feet high, 215 feet higher than the Washington monument counting from the sea level. At the base of the triangle are two towers, each 450 feet in height. The antennae are strung from the tallest tower to the other two. This arrangement gives the maximum spread and takes the fullest advantage of the tallest tower.

On October 28, this powerful station made its first test and its herculean, though invisible, waves drowned out the impulses from all other sending stations and demanded the right of way.


Gettysburg speech
Birdseye model
LINCOLN MEMORIAL
Monument from Portico
Lincoln Statue

THE MASSIVE HEAD OF ABRAHAM LINCOLN

By Gutzon Borglum

Rotunda of National Capitol

On the opposite page are shown the architect's drawings of the Lincoln Memorial, as designed by Henry Bacon, of New York, which has just been accepted by the Lincoln Memorial Commission and for which Congress appropriated $2,000,000. This Memorial will be a monumental structure standing on an eminence raised in the beautiful park along the Potomac at Washington. It will typify in allegory Lincoln's qualities, Charity, Patience, Intelligence, Patriotism and Devotion to High Ideals. The most important object of the Memorial will be the statue of Lincoln, placed in the center, reflecting in its isolation the gentleness, power and intelligence of the man.

VIEWS & REVIEWS

An Epoch-Making Work

IT IS probable that the strongest impression concerning the Panama Canal which exists in the mind of the average American relates to its bigness. It undoubtedly is a big thing. Both as to physical magnitude and cost of construction it is the greatest engineering enterprise of history, but the truth is that the bigness of the Canal is the smallest thing about it. The really big things about the Canal are the changes which its construction and operation are certain to produce, changes which will affect many forms of human activity and reach out, some to the ends of the earth, and some to the end of time. Think, for instance, of the changes it will make in vessel routes and the saving in distance, time and cost of transportation compared with those now used. San Francisco will find New York almost a next-door neighbor, and Liverpool and Hamburg will be just around the corner. Some cities, thriving now, will find their docks deserted, while lonely islands, which have slept in silence through all the centuries of the past, will wake to find their reef-rimmed harbors ports of call upon the busy trade routes of the world.

The work of Colonel Gorgas and his assistants, which has changed the Isthmus from a pest hole to a health resort with one of the lowest death rates on earth, is bound to have a far-reaching influence. It is not too much to say that without their work the building of the Canal would have been impossible. But if flies and mosquitoes can be exterminated in the Canal Zone the same thing can be done in the United States—and with them would go the diseases they transmit. Some of the cities of tropical America are already arranging for thorough sanitation, notably Guayaquil, long known as one of the filthiest spots on earth. Other cities will do the same thing, either voluntarily or through the rigid quarantine enforced at the Canal. Sanitation has transformed not only the cities of Panama and Colon but the whole Canal Zone, and now we know that great regions, long considered uninhabitable, can be reclaimed and furnish food for multiplied millions of population.

World's records for rapid and efficient work have been broken more than once and in more than one line on the Canal, and these new records have been made, not in the cool, invigorating climate of the North but under a blazing tropical sun and amid the downpour of torrential rains. Nor have these results been accomplished by the driving of brutal taskmasters or the exploitation of labor. On the contrary the canal employees have been better paid, better housed, better fed, better treated in every way than any other body of workers in the world. Labor is something more than a commodity and employees are entitled to more consideration than sacks of cement or steam shovels. It has been recognized on the Isthmus that the workers are human beings and they have been treated as such, and they have made records for speed, efficiency and economy because they were filled with enthusiasm for their work and were physically and mentally fit for the tasks they had to do.

In many ways the Panama Canal is an epoch-making work, and the beginning of the new epoch will date from October 23, 1913, for on that day Colonel Goethals promises to take a United States battleship—which should be none other than the *Oregon*—and put it through from ocean to ocean. Strangely enough most of the rest of the world seems to have a keener realization of this great event, and of the opportunities it will afford, than do the people of the United States whose money has made it possible. It seems probable that for the first ten, perhaps for the first twenty or twenty-five, years after the Canal is opened the greater part of the commerce that will pass through it will be financed by foreign capital, transported in foreign ships and carried to and from foreign, rather than American, ports.

We can never get the fullest possible benefit from the building of the Panama Canal until the rivers and harbors of our own country are completely improved and adequately equipped. All the principal ones, at least, should have been made ready by the time the Canal is opened. That is now impossible but the work should be done as soon as it is possible. The great ports of Europe are adding largely to their facilities, already far superior to ours, and Director-General Barrett of the Pan-American Union says that some of the countries of South America are doing far more in this direction than we are.

Work on the Canal is going forward with extraordinary swiftness while on most of the waterways of the United States it is proceeding very slowly, although Army Engineers are in charge in both cases. The reason for the different rate of progress, as Colonel Sibert points out elsewhere in these pages, lies in the fact that in one case all the funds required are provided as fast as they can be used, while in the other dependence must be placed on piecemeal appropriations.

An incident which indicates the benefits which will result when the Canal is opened and our own waterways are given dependable channels occurred a few months ago. A shipment of goods, composed partly of barley and partly of canned fruits, was taken from San Francisco to Panama, transferred from ship to train and hauled across the Isthmus to Colon, transferred from the train to another ship and carried to New Orleans and there transferred a third time to a barge in which it was taken up the Mississippi to St. Louis. Even with all these intermediate rehandlings the freight on this single barge-load of goods was $2,000 less than it would have cost to send it from San Francisco to St. Louis by rail.

The Question of Tolls

THE British Government claims that the provision of the Panama Canal Act which exempts the coastwise commerce of the United States from the payment of tolls is a violation of Section 1 of Article III of the Hay-Pauncefote treaty, which reads: "The Canal shall be free and open to the vessels of commerce and of war of all nations observing these rules, on terms of entire equality, so that there shall be no discrimination against any such nation, or its citizens or subjects, in respect of the conditions or charges of traffic, or otherwise. Such conditions and charges of traffic shall be just and equitable."

It would seem to be sufficient to point out that the coastwise commerce of the United States is a purely domestic matter, with which other governments have no proper concern, and that foreign ships are prohibited by law from engaging therein. Up to the present time Great Britain has confined her protest to the one point named, but it will be interesting to watch the further development of her case. Will she claim the right, when the Canal is open, to engage in the coastwise commerce of the United States, because, otherwise, her ships would not be on "terms of entire equality" with those of this country?

And what about our warships? If the British interpretation of the treaty is correct, American ships of war must pay the same tolls as those of other nations. But to take the money out of the naval fund and put it back into the canal fund, or the general fund, would be an evasion, a subterfuge and a farce. The spirit of the treaty—under the British interpretation—would require that the passage of our warships should cost us as much as other nations pay for theirs.

One way to accomplish this would be to burn up the money received as tolls, or, if it were paid in coin, take it beyond the three-mile limit and drop it into the depths of the sea. No doubt Great Britain would be entirely satisfied if we paid the tolls for the passage of American warships through our American Canal into the British treasury—but there are some doubts whether such an arrangement would be entirely satisfactory to the American people.

An Epoch-Making Law

SECTION 11 of the Panama Canal Act is the most dynamic piece of transportation legislation which has been enacted since the passage of the Interstate Commerce law. Much has been said in certain quarters about the falling off of traffic on our rivers, but there is no mystery as to the reason for this result—at least to Colonel Goethals, who says: "Three times while I was in charge of improvements on the Tennessee River I saw steamboat lines start, develop a good traffic—and presently go out of business. Each time I found that railroads had bought them out to destroy their competition." After July 1, 1914, that sort of thing will not be so common, for railroad ownership or control, in any degree or by any method, of competing boat lines is prohibited. That same dynamic Section 11 gives the Interstate Commerce Commission power to order railroads to construct tracks to the docks of water carriers and to determine the terms on which they shall be operated; to establish through routes and maximum joint rates between rail and water lines and determine all the terms and conditions under which such joint traffic shall be handled; to establish maximum proportional rates by rail to and from ports to or from which traffic is carried by water; and to require railways to give equal facilities to all steamship lines.

The day of destructive competition between railways and waterways is done; the day of constructive cooperation has dawned.

There is already apparent the promise, or rather the certainty, of a speedy renaissance of water transportation. Kansas City had faith enough three or four years ago to subscribe $1,250,000 for the establishment of a boat line and already has steamers and barges in operation. St. Louis has

organized a company for the same purpose and Pittsburgh and St. Paul are planning to follow her example. New life has been given the boat line operating on the Columbia and Snake Rivers and fifteen self-propelling steel barges have been ordered to ply between the Black Warrior coal basin in Alabama and New Orleans through Black Warrior, Tombigbee and Mobile Rivers, Mississippi Sound and Lake Borgne Canal.

More Facilities Needed

IT IS unfortunate that practically all the railway journals and many railway men are shortsighted enough to oppose the improvement of waterways and the development of water transportation. But it is encouraging to note the increasing number of prominent railway officials who are broadminded and farsighted enough to recognize the fact that the development and use of waterways, and of good roads as well, is a benefit and not an injury to railways, and that the country needs all the transportation facilities it can get. The motor truck on one hand and the steamboat on the other will give to the railway far more traffic than they take away.

The crying need for more transportation facilities is shown by the car shortage which is already in evidence and bids fair to reproduce the disastrous conditions of 1906-7. Already we hear of coal mines which work only two days a week because they cannot get cars in which to ship their product, while great cities view the approach of winter with dismay because they cannot get sufficient fuel for their needs. The railways are prepared to handle a far larger traffic than they were six years ago, but the productive capacity of the country is so enormous that it continually outruns all extension of railway facilities. We can attain the completest possible utilization of our natural resources and maintain the highest and most permanent prosperity only by the development and coordination of the whole "Transportation Trinity," the highway, the railway and the waterway.

Waterway Conventions

MOST of the waterway associations which advocate particular projects have held their annual conventions—the Atlantic Deeper Waterways Association at New London, Conn.; the New York State Waterways Association in Watertown, N. Y.; the Lakes-to-the-Gulf Deep Waterway Association in Little Rock, Ark.; the Mississippi-to-Atlantic Waterway Association in Albany, Ga.; the Upper Mississippi River Improvement Association at Burlington, Iowa; and the Snake and Columbia River Association in Lewiston, Idaho. The attendance and enthusiasm reported at all these conventions indicates a gratifying growth of appreciation of the importance of the transportation question and a determination to secure the utilization of our waterways. The convention of the Ohio Valley Improvement Association is to be held in Cairo, Ill., November 14th and 15th.

The Ninth Convention of the National Rivers and Harbors Congress, which advocates, not a project, but a national policy regarding waterways, will meet in the New Willard Hotel, Washington, D. C., on the 4th, 5th and 6th of December. President Taft will make the opening address. A most instructive and interesting program has been arranged and a record-breaking attendance is expected.

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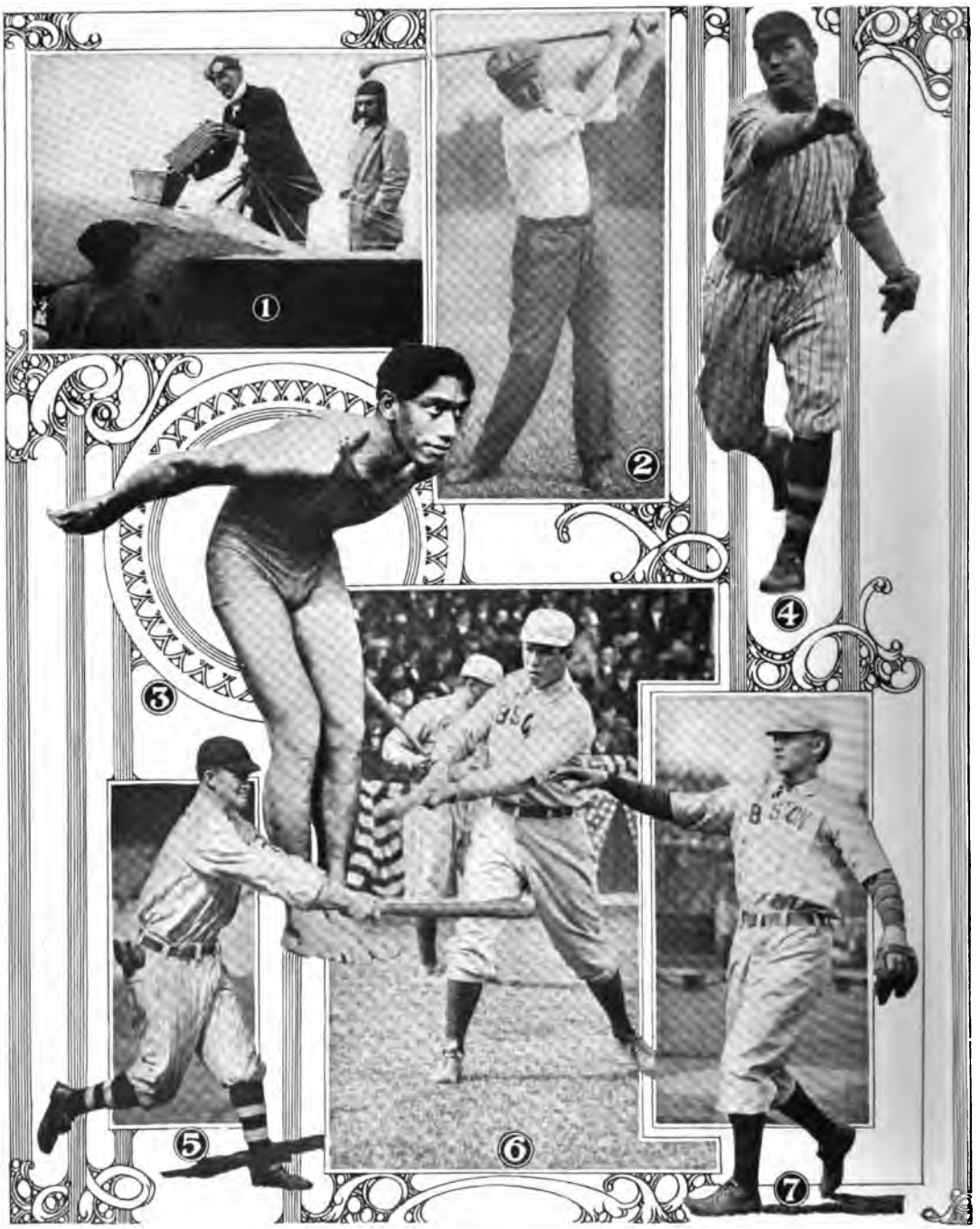


A FEW CHAMPIONS OF 1912

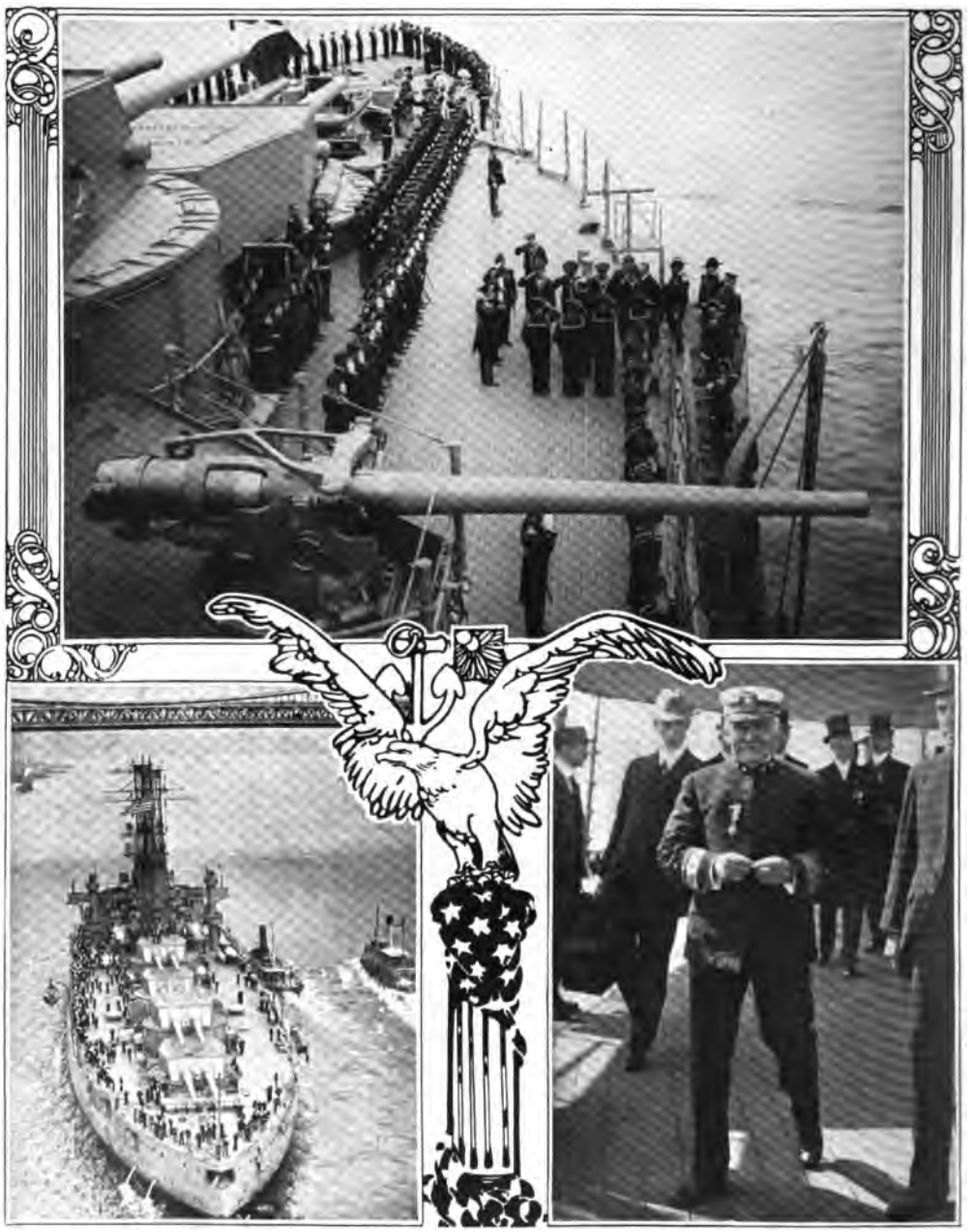
1 French Aviator Legagneaux, who made a record for altitude by going up 18,635 feet.
2 Jerome D. Travers, again Amateur Golf Champion of the United States.
3 Duke Kahananoku, the Hawaiian who represented the United States in the swimming events at the Olympic Games and made the record for short-distance swimming in a 100-meter swim—one minute, two and three-fifths seconds.
4 Tesreau, one of the leading pitchers of the National League.
5 Murray, who redeemed himself in the 1912 World's Series.
6 Tris Speaker, the heavy hitter of the Red Sox.
7 Wood, champion pitcher of the American League.

MODERN MERMAIDS

1 MISS KATHERINE WALLACE, WHO RECENTLY SWAM ACROSS THE DELAWARE RIVER AT PHILADELPHIA WITH HANDS AND FEET TIED

2 MISS ANNETTE KELLERMAN, THE FAMOUS SWIMMER AND DANCER

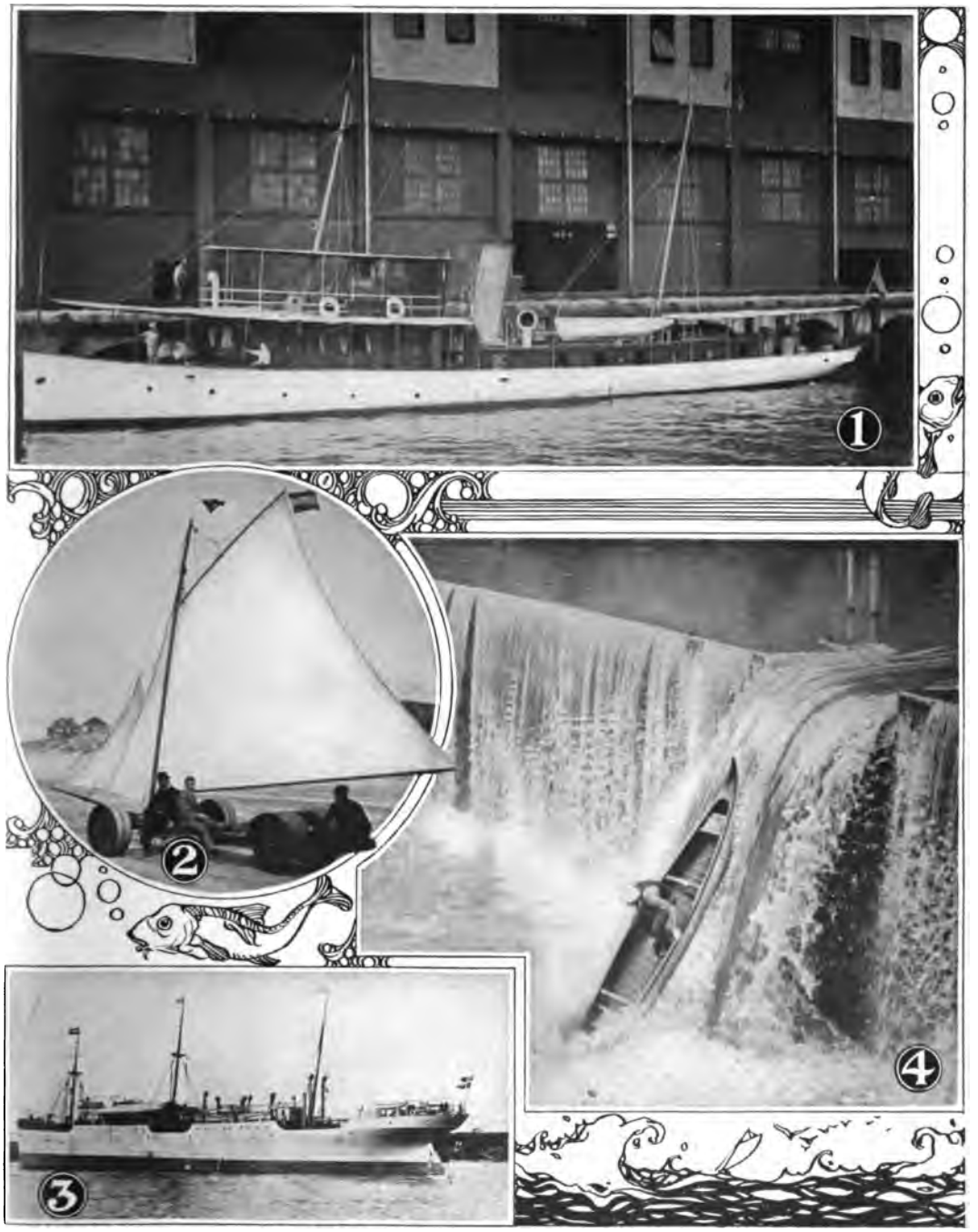
3 MISS NELLIE SCHMIDT, THE FIRST WOMAN TO SWIM ACROSS SAN FRANCISCO BAY



INCIDENTS OF NAVAL REVIEW

WHEN OUR FIGHTING CRAFT WERE REVIEWED BY PRESIDENT TAFT AND SECRETARY OF NAVY GEORGE VON L. MEYER, HELD RECENTLY AT NEW YORK

The picture at the top, taken from the "crow's nest" of the superdreadnought *Arkansas*, shows the President and Secretary of the Navy just coming aboard. This group also shows the *Wyoming*, which battleship and the *Arkansas* are our greatest fighting machines. The other picture is of Rear-Admiral Hugo Osterhaus coming forward to greet the entertainment committee aboard the U. S. S. *Connecticut*.



AQUATIC NOVELTIES

1 The S. S. *Bratton*, used at Philadelphia to exterminate rats on ships which come from ports infested with the bubonic plague. The method used is to pump an oxygen-expelling gas into the ships' hold, which suffocates the rats and their parasites, the bubonic flea, the bite of which is said to spread the disease.
2 Dutch sand flier. Remarkable speeds are attained by these queer craft.
3 The Diesel motor engine, using crude petroleum under tremendous pressure, is attracting world-wide attention. The picture is of S. S. *Christian*, the first motor-propelled liner to cross the ocean. Note absence of funnels.
4 J. W. Ingham, of the Benham Boat Club of Philadelphia, taking a 25-foot waterfall in a frail canoe. He attempted to repeat the stunt, but the police prevented.

DIFFERENT PERIODS OF TRANSPORTATION

ILLUSTRATED AT WAR GOVERNORS' CELEBRATION RECENTLY HELD AT PITTSBURGH

Note Costumes of the periods.

THE SOUTHERN PORTS' PREPARATION FOR PANAMA

By AGNES C. LAUT

YOU will not go far in this article before you realize that the author has a first-hand knowledge of the facts as well as a most interesting way of presenting them. Miss Laut is a Canadian by birth and was an editorial writer of note before she entered the broader field of magazine work, in which she is now so prominent. Miss Laut is the author of "Lords of the North," "The Heralds of the Empire," "Story of the Trapper," and "Vikings of the Pacific," etc.

THERE'S a curious game of chess—chess with a handicap—going on among all the ports of the South in their preparations for Panama. But five years ago, a great railroad man of the North referred to the Canal as a possible "frog pond for lily pads." Yet that same man's railroad system has within the past five years bought terminals and connecting lines into Houston, into New Orleans, into Mobile; and when I was in Pensacola, his agents were then looking over the situation because—as one of them explained—they had found that they could ship Pacific Coast produce to Atlantic Coast ports via Panama Canal to the Gulf of Mexico, and from ports on the Gulf of Mexico inland by rail to Atlantic points, and still save four cents a hundred-weight on the all-rail transcontinental rate.

Within five years, seventeen railroad systems have come down to Houston. As many again have focused at New Orleans. Five big systems have centered at Mobile; and three new systems are planning and heading for Pensacola.

Heretofore, American railroad systems have pointed East and West, with laterals North and South to draw transportation into the main current of the transcontinental systems East and West. Today, the railroad systems are pointing North and South—North to drain Canadian traffic, South to direct Middle West traffic to seaboard by way of the Gulf. Why?

Only yesterday, the policy of the railroads was to monopolize all terminals and bar out all steamships, but those controlled by their own system. Today, Houston has its own belt line terminal system giving equal favors to all comers—rail or ship. New Orleans has spent close on twenty-five million dollars to put all railroads and all ships on an equal footing in her harbor. Mobile has fought out in the courts whether railroads can bar out independent ships by extra charges concealed in "switching;" and Pensacola has practically secured three-fourths of her harbor front free from all but civic control. Why?

Go up the South coast, even as far as Norfolk, and you will find the same stirring of public sentiment, public hope, in anticipation of Panama. The biggest importer of lumber in Norfolk told me that it cost 12 to 15 cents a hundred-weight, including handling at both ends, to ship lumber 3,500 miles to European ports. To bring that lumber diagonally across the continent from Washington to Norfolk (the South has reached the era when it must import lumber) cost 85 cents per hundred-weight. By way of Panama, that lumber was to be laid down at Norfolk at 20 cents; 16 cents more would send it back inland as far as the Mississippi; so that on the transcontinental rate alone, Middle West States would save on that lumber from 65 cents to 47 cents.

Go up as far as Montreal or Vancouver, and you will find the same stirring of the waters. Vancouver is 600 miles plus from the wheat fields of the Canadian Northwest. Montreal is 2300 miles plus from

NEW ORLEANS, WHICH IS NOW THE SECOND PORT OF THE UNITED STATES, OWNS HER OWN DOCKS AND TERMINAL FACILITIES, INCLUDING A BELT LINE RAILWAY

the wheat fields of the Canadian Northwest. What Vancouver asks herself is—if the water rates on grain are as one to three, or one to ten, compared to rail—why should that grain of the Canadian Northwest not go to Liverpool by way of Vancouver and Panama? Portland is asking and acting on the same question. So are the Southern ports in relation to the wheat fields of the Middle West.

And the answer to the Southern ports is the same as the answer to Vancouver—the rates South and West are not proportionately the same for distance to the Pacific and the Gulf as they are to the St. Lawrence and the Atlantic. Take Houston and Vancouver as two examples! These ports point out that the rate on 1000 miles for grain from Chicago to New York is 10 cents, compared to the rate from New York to Liverpool for 3000 miles of as low as 3 cents and not higher than 5 cents. Houston is 720 miles from the grain fields, compared to New York's 1335 miles. Vancouver is 600 miles from the grain fields, compared to Montreal's 2300 miles. Why shouldn't Houston and Vancouver get the grain trade? The answer is—rates.

First and foremost, Vancouver and Houston have no elevators. Grain without elevators costs 5 to 8 cents a bushel extra in sacking and handling. Now Montreal and New York and Baltimore and Philadelphia have the most nearly perfect

"PENSACOLA HAS PRACTICALLY SECURED THREE-FOURTHS OF HER HARBOR FRONT FREE FROM ALL BUT CIVIC CONTROL"

systems for cheap, quick handling in the world. Grain at Montreal does not need to be sacked. Each of four automatic conveyors can handle 15,000 bushels in an hour, or all together load 60,000 bushels in an hour; and this at a cost of only ¼ of a cent in, and ¼ of a cent out.

Montreal can operate 14 different ships in berth at a time, owns her own trackage, and charges only what will meet disbursements. Montreal has borrowed ten million dollars from the Dominion Government at a low rate of interest to improve her harbor, and there has probably been spent in the improvement of the St. Lawrence not less than forty millions, and something over ninety millions on her canal system feeding St. Lawrence traffic. At least one hundred millions have gone to the improvement of New York Harbor. To the argument of distance, presented by the Western and Southern ports, the Atlantic ports at once answer "rates."

How about rates? What they will be in the future no man can tell. It is a game of chess—chess with a handicap. From Calgary to the Great Lakes, the rate runs from 22½ cents to 25 cents. Add 5 cents for forwarding down the Lakes to seaboard, and a rate across the Atlantic varying with seasons and insurance—Calgary grain can reach Liverpool for 40 to 50 cents. Now, how about Vancouver? Compared to the 25-cent rate to the Lakes, or 30-cent rate to Montreal (though this means 40 when navigation closes and the route is all-rail) for the 600 miles to Vancouver, the rate is 22½ to 25 cents, plus sacking, plus ocean rate by tramp carrier. That is—under most favorable conditions, it is more expensive to send the grain to seaboard 600 miles than to the Lakes, 1200 miles.

How about Houston? Average the grain rates for the Middle West, Kansas, Nebraska, etc., to Houston, and they come from 30 to 35 cents. The distance is 720 miles. Average the grain rates for Chicago to New York—10 cents. The distance is 900 to 1000 miles according to the road. That is the Southern ports are suffering a handicap of 3 to 1.

In spite of all this, the Southern ports are spending millions in anticipation of the opening of Panama—digging canals, putting in independent terminals, building sky-scrapers, establishing independent steamship lines, doubling and trebling in population and business and prosperity. Why?

First: Because, though man-made rates may dam and obstruct traffic, they can't stop it. Sooner or later, it will find its way to the sea by the line of least resistance—the shortest route.

Because, in the second place, if the merchantmen of the world, or even one-half the merchantmen of the world, traverse the ocean highways of world traffic through Panama, they are going to call at Southern ports for backward bound cargoes—cotton for the Orient to mix with the lower India grades; flour for China; steel for Japan; lumber, beef, oil, steel, grain, flour for Europe. They are going to give Southern ports independent lines of steamships. They are going to give them competing (not *pooled*) rates. In fact, so keen are some Southern ports for independent lines, that three independent lines have been established by the ports themselves.

Last, but possibly most important, South America, Central America, Mexico are just awakening. Their trade is worth billions. At present, nine-tenths of it goes to Europe. Why should it not come to Southern ports? Half of South America is a coal-less, steel-less land. Why could not Alabama and Texas and Mississippi points ship steel and coal to South America and take in return the rare hard woods and fruits of the tropics? The way this feature of expectations is being worked up is a story in itself. It need scarcely be told here that it is shorter and cheaper as 1 to 10 to ship into the vast interior of South America through Panama and back by the West coast, than round the great bend of Brazil and in by the East coast.

What are the ports of the South doing in anticipation of the great impetus to prosperity in the opening of Panama?

Take Houston and Galveston first! Their interests may, perhaps, be grouped as one, since the dredging of the Buffalo Bayou has practically given Houston ocean front. The clearing of this canal has cost seven millions, the building of independent terminals another four millions. In Houston are 47 lumber corporations. You can buy hardwood from these lumber corporations at $25 a thousand, soft wood at $18 a thousand. In New York that

identical lumber costs from $42 to $75 a thousand. Why? Rates! Too many middlemen between!

Not long ago, I published the fact that I had been asked $60 a thousand for lumber in New York State. At once came printed and private (to the editor)attacks for the statement. Within one month of the time of the attacks, I was able to send one of the attacking lumber journals a bill for—not $60, but—$65 and $75 a thousand.

Texas hopes to see these lumber rates cut by water shipment in independent lines in a proportion of 4 to 1. Similar expectations are held regarding lumber, cotton, wheat. At the end of the canal at Houston are 174 acres of a turning basin. The canal, itself, offers factory sites on both sides its 50 miles. Will the day come when Texas will manufacture her cotton and wheat, as she today does her beef and rice? Will furniture factories move down from inland to the coast? Texas ports hope so. The canal is now 20 feet deep and is being dredged to a depth of 25.

What made Manchester a great city? What made Montreal? The fact that these cities were farthest inland harbors. Houston boasts that she is 500 miles nearer the grain fields of the Middle West than any harbor in America. Houston hopes that of the many ocean liners to be attracted to her doors by the canal, of even the average big freighters—20,000 tons—one ship will carry as much traffic as 1,000 cars, or 40 trains of 25 cars at rates better than rail as one to four.

And there can be no doubt that these hopes will be in a measure justified. The crop had no sooner been harvested in Kansas this year, than three cargoes of grain went out by way of Houston and Galveston in one week—and this, practically, without elevators or automatic loading devices. In fact, Houston expects to expand like Chicago, and for the same reasons—as the head of navigation and the farthest inland harbor.

When you come to New Orleans, you must practically include the plans of St. Louis and Kansas City to feed traffic into New Orleans by systems of civic steel barges and river freighters. Within the past year, both Kansas City and St. Louis have established such systems by public subscription; and it is pointed out that coal and steel can be brought down from Pittsburgh at a reduction of almost 500 % against rail rates. Kansas City and St. Louis are really doing this because Texas ports have forced them to it.

Kansas City and St. Louis formerly handled much of Texas traffic. Then Texas began to develop her harbors and put in independent lines. It was so much cheaper for Texas to deal with New York, Boston and Philadelphia by water than Kansas City and St. Louis by rail, that the trade formerly enjoyed by these cities began to go to Atlantic ports. The saving to inland points like Ft. Worth was something like 100 %; so Kansas City and St. Louis have established their civic barge systems. But the system would be incomplete without independent lines at New Orleans; so New

TURNING BASIN SHIP CHANNEL AT HOUSTON, "WHERE SEVENTEEN RAILROADS MEET THE SEA." EXCAVATIONS IN BACKGROUND SHOW LOCATION OF FREE MUNICIPAL WHARVES

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"MOBILE HAS FOUGHT OUT IN THE COURTS WHETHER RAILROADS CAN BAR OUT INDEPENDENT SHIPS BY EXTRA CHARGES CONCEALED IN 'SWITCHING'"

Orleans has established her civic steamship line, in the beginning, chiefly designed for South American commerce.

Both St. Louis and New Orleans have opened elaborately organized South American bureaus. Files are kept of every business house and bank and their standing, in South and Central America. A staff of commercial experts and translators is attached to these bureaus. Both cities issue trade journals in Spanish for South and Central American trade. Catalogues of "made in America" goods printed in Spanish are sent from the New Orleans Board of Trade, and the returns in a single year have been amazing.

Why it was necessary to establish independent steamship lines to South America is too long a story to be told here. It was *not* a case of other steamships not existing. It was discrimination against American goods by foreign "pools." Anyone wanting the most amazing details can get them by writing to the New Orleans Progressive Club.

New Orleans has, of course, her civic and independent terminal system. This belt line, guaranteeing equal treatment to all railroads and all ships, was a thing of gradual growth, but twenty-five millions, probably, does not exceed its cost. A private corporation was just putting in similar terminals for Mobile when I was there. These are to be 1700 feet long, with berths for 15 or 20 vessels, tracks for 500 cars, and fireproof steel and concrete sheds. Mobile channel has been gradually deepened from 18 to 23 and 27 feet, at a cost of two millions, and the improved channel has witnessed increased traffic from 290 steamships calling in 1895, to 618 calling in 1911. Of these, 121 were coastwise traders.

With rates in their present higgledy-piggledy mix-up, it is an easy matter for

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THE GREAT CAUSEWAY, COSTING $2,000,000, WHICH CONNECTS GALVESTON WITH THE MAINLAND. IT ACCOMMODATES FOOT PASSENGERS, TEAM TRAFFIC, ELECTRIC CARS AND STEAM RAILWAY TRAINS.

the ships to get a cargo going out. It is another matter to get a cargo coming in. At Mobile are five trunk railroad systems. Long ago, Mobile was a great cotton port. Of late, Galveston and Savannah have captured the big cotton traffic. With inland navigation improved almost up to the coal and steel areas of Alabama, Mobile hopes to get back not only big cotton traffic, but to develop an enormous export in steel and iron. The variation in rates is variously estimated as likely to be 4 to 1, 3 to 1. With barge access to the coal fields, Mobile can boast the cheapest bunker coal in the world at $1.50 to $1.80.

When you come to Pensacola, you are at the harbor for which nature has done the most and man the least. Pensacola boasts a natural draught of 35 feet. It is the nearest of all the Gulf ports to Panama. It is one of the most sheltered harbors in America. Over fourteen millions have been spent in the navy yards, recently reduced; and Pensacola is 754 miles to the Middle West, compared to New York's 1000 miles. Three-fourths of her harbor front is controlled by the city, but Pensacola has in the past suffered for being hitched up to one railroad. This road was not favorable to independent coasting ships. Independent ships stopped calling, and the harbor was killed; but recently three new railroad systems have pushed into Pensacola.

An inland sea channel will presently be completed, giving barge access to the coal regions, and Pensacola is at present divided as to whether she hopes to become a second Manchester or a second Los Angeles. Fort Barrancas and the navy yards give her more the character of a great pleasure and military resort than traffic centre; but what has built Los Angeles but the spirit of the people? And Pensacola boasts the same progressive spirit. It is her ardent hope, too, as closer relations with Central and South America develop, that the navy yards will be restored to former activity.

THE RAILROAD THAT WENT TO SEA

[illegible]

GLIMPSE OF OLD PANAMA

By DR. C. L. G. ANDERSON

MEDICAL *Reserve Corps, U. S. Army; late Physician Isthmian Canal Commission; formerly Major and Surgeon U. S. Volunteers in the Philippines. This article has been prepared by Dr. Anderson from his history, Old Panama and Castilla del Oro, a short review of which appears at the end of this article. Dr. Anderson has lived and traveled much in Spanish-America, and while he writes with the accuracy of the historian that he is, he preserves the spell of romance that broods over every coast of the Spanish main.*

IN the year 1501, Don Rodrigo de Bastidas sailed along the Northern shores of South America, lately discovered by Columbus, trading with the Indians for gold and pearls. He followed the coast Westward as far as the Gulf of Urabá, or Darien, and the site where Nombre de Dios was settled later, about midway the Caribbean shore of the Isthmus. Bastidas had with him that able pilot, Juan de la Cosa, and a bright young man by the name of Vasco Nuñez de Balboa. These were the first Europeans to visit the eastern half of the Isthmus of Panama. Bastidas got back to Spain with his pearls, brought his family out to Santo Domingo, and became the founder and first governor of Santa Marta.

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The next year, 1502, Columbus, on his fourth and last voyage to the new lands and seas he had found in the West, steered southward along the Caribbean coast of Central America looking for a waterway, which he believed existed in that region, to carry his caravels into the Indian Ocean and to the magnificent empire of Kubla Khan. Through his Indian interpreters he understood that the other ocean he was seeking was not far off, and that the Ganges River was only a few days distant, but the worm-eaten condition of his vessels and the fierce storms encountered forced the old admiral to turn about at the little port of El Retrete on the Isthmus of Panama, and give up his long-continued quest for the strait.

Turning backward along the western half of Panama, Columbus entered the River Belen in the province of Veragua on the feast of the Epiphany, January 6, 1503, and there he and his brother Bartholomew started a settlement which the admiral named Nuestra Señora de Belen. Las Casas, the good bishop of Chiapa, calls this the first town founded by Spaniards on the continent of America. The Quibian, or head chieftain of Veragua, resented the invasion of his lands by the white strangers, called together his warriors, and drove the Christians to their ships.

On this voyage Columbus entered or named many ports and rivers of the Isthmus, among them the rivers Belen, Veragua and Chagres; and the harbors of Colon, Puerto Bello and Bastimentos. Almirante (Admiral's) Bay on the confines of Costa Rica was so called because Columbus, on this voyage, was the first European to navigate its waters.

After many vicissitudes of fortune, Columbus managed to return to Spain, where he died in neglect in 1506. About 1540, his ashes were brought back to America and interred in the Cathedral at Santo Domingo, not far from the grave of Rodrigo de Bastidas. Thus the *restos*, or remains, of the two discoverers of the Isthmus of Panama rest beneath the same roof in the old capital of the Indies.

The next Europeans to visit the Isthmus were the parties of the rival governors, Diego de Nicuesa and Alonso de Ojeda, between whom King Ferdinand had divided the government of the mainland, or *tierra firme* as the Spaniards called it. Both expeditions departed from Santo Domingo in the month of November, 1509. The grant to Nicuesa was called Castilla del Oro (Golden Castile) and included all of

THE ADUANA, OR OLD CUSTOM HOUSE, AT PUERTO BELLO. TONS OF SILVER AND GOLD PASSED THROUGH HERE YEARLY TO ENRICH THE COFFERS OF SPAIN

COLUMBUS AND THE INDIAN MAIDEN—STATUE PRESENTED TO THE PEOPLE OF PANAMA BY THE EMPRESS EUGENIE. OF THE MANY ALLEGED LIKENESSES OF COLUMBUS THIS IS CONSIDERED PERHAPS THE TRUEST DELINEATION OF THE OLD ADMIRAL

the Isthmus of Panama. At that time, Veragua was a synonym for gold, so Nicuesa first sought the rich province of Veragua where Columbus declared that he saw more signs of gold in the first two days than he saw in Hispaniola during four years.

With shipwreck and loss of men, the expedition found the Rio Belen, and on the site occupied by Don Bartolomé Colon, in 1503, Nicuesa established the first capital of his territory. Starvation and disease soon drove him out, and he sailed to the Eastward. A Genoese sailor, named Gregorio, who had been with Columbus, showed the way into Puerto Bello, where was found an anchor sticking in the sand, left by the old admiral. The Indians were hostile and Nicuesa proceeded seven leagues farther on, when the inviting appearance of the shore prompted the governor to exclaim, "*Paremos aqui en nombre de Dios*" (Let us stop here in the name of God). Thus was named in advance the town of Nombre de Dios, founded in 1510, and still in existence.

In the meantime, Ojeda had arrived at his territory East of the Gulf of Urabá, now included in the boundaries of Colombia. He had many fights with the hostile natives and returned wounded to Santo Domingo. The remainder of his party, under the Bachiller Encisco, was so hotly beset by the Carib Indians that, upon the advice of Balboa, they crossed to the Western shore of the Gulf of Urabá, where the natives did not use the deadly arrow-poison. Chief Cemaco was defeated and his principal town, called Darien, yielded abundant provisions and much golden booty to the Christians. The Spaniards located in the village, christening it Santa Maria la Antigua del Darien, a handicap of a name usually abbreviated to Antigua.

At the first town meeting held by white men in America, Encisco was deposed and Balboa and Zamudio were elected alcaldes. Being now in Castilla del Oro, Governor Nicuesa was invited to come to Antigua and rule the colony. When the governor finally arrived the people had changed their mind, and they bade him begone. He and his party sailed away from Darien on the first day of March, 1511, and that was the last ever seen of Diego de Nicuesa, first governor of Castilla del Oro.

Balboa remained at the head of the colony and was *de facto* governor of all Europeans at this time on the mainland. Chief Panciaco told him of another ocean sea beyond the mountains, and on the 25th of September, 1513, from the peak of Pirre in the province of Quarequa, Balboa was the first white man to behold the Pacific Ocean. From a like summit farther West, Francis Drake and John Oxenham, in 1573, were the first Englishmen to view this sea forbidden to them by the Spaniards. Both these men lived to sail upon the Pacific, Drake on his voyage of circumnavigation, and Oxenham to loot the Spanish ships, and later to be executed as a pirate in Lima.

Balboa descended the South slope of the divide, and on the 29th of the same month waded into the Gulf of San Miguel and took possession for the crown of Spain. Making a leisurely journey back to the North coast, Balboa reported his great discovery to the king, asking that he be made governor of this territory. Before hearing from Balboa, Ferdinand had appointed an old colonel of infantry, named Pedro Arias de Avila, to command and govern the Isthmus. The new governor, usually called Pedrarias by Spanish writers, in due time arrived at Antigua with a force of 1,500 men, a few of whom, like Hernando de Soto, carved their names deep on the annals of the New World. It soon became evident that Pedrarias was jealous and envious of the fame of Balboa, and boded him no good.

Balboa had been named Adelantado of the South Sea and of the province of Panama, and was preparing a force at the Pearl Islands to explore in the direction of Peru, when the governor invited him to return to Acla to confer with him. Upon arrival at this new settlement on Caledonia Bay, false charges of treason were preferred against Balboa, and he was found guilty and beheaded, together with four of his friends.

Pedrarias soon abandoned Antigua and moved his capital to the shore of the South Sea. At the fishing station known as *Panama*, the governor founded the city of Panama on the 15th of August, 1519. It was here that Francisco Pizarro, Diego de Almagro and Father Luque (Padre Loco they called him) signed the famous agreement, in 1526, for the discovery and despoliation of Peru.

FABRE PANCIATO SHAMES THE SPANIARDS FOR QUARRELING OVER A BIT OF SALT WHEN THE KINGDOM OF PERU, AND THE SOUTH SEA, CONTAINED SO MUCH OF IT

BALBOA AND OTHER SPANISH CAPTAINS FOUGHT A TRIBE OF INDIANS WHO LIVED IN TREE TOPS

SIR FRANCIS DRAKE, WHO PERFORMED SO MANY DARING DEEDS UPON AND ABOUT THE ISTHMUS OF PANAMA. FROM AN ORIGINAL PAINTING

PIZARRO, ALMAGRO AND LUQUE MAKING THEIR FAMOUS AGREEMENT IN THE CITY OF OLD PANAMA FOR THE DISCOVERY AND DESPOLIATION OF PERU

HEAVY MERCHANDISE WAS CARRIED ON FLAT-BOTTOMED BOATS UP AND DOWN THE CHAGRES RIVER. THE MOUTH OF THE CHAGRES WAS ENTERED BY COLUMBUS IN THE SEARCH FOR A WATERWAY TO THE INDIAN OCEAN, AND TODAY, AFTER FOUR HUNDRED YEARS OF EFFORT, THE PANAMA CANAL FOLLOWS THE CHAGRES RIVER ROUTE

The city of Panama (the ruins of which we now call Old Panama) was the first settlement by Europeans on the Pacific Coast. It was called the Gold Cup on account of its riches, and for years was the metropolis of the South Sea. The city grew rapidly under the stimulus of the Peruvian trade, and in 1575 consisted of 500 houses, all of wood. In 1610, Panama contained 548 white male citizens, and 3,500 negro slaves, besides the women, children and free Africans. At this time, the houses of the Cabildo, the Audiencia, Hospital, Jesuits' convent, nunnery of the Conception and slaughter-house were constructed of stone. Most of the people were rich from trade and traffic, and a few had estates in the country and raised cattle. Some merchants possessed mule-trains, others owned barges on the Chagres River, worked by negro slaves, which bore the heavy merchandise between Nombre de Dios and Venta de Cruces.

The wealth of Peru, Mexico and other parts of the Indies naturally invited the attention of privateer and buccaneer. Spanish galleons were overhauled and robbed all over the Caribbean, and on the voyage to Spain. The most prominent of the privateers, in the latter part of the sixteenth century, was Sir Francis Drake, who was a terror to the whole Spanish Main.

In the seventeenth century the Caribbean Sea was dominated by English, French and Dutch buccaneers, those New World Vikings, who not only swept the sea, but invaded the Spanish provinces and crossed the Isthmus of Panama and infested the South Sea. Writings of their transactions, mostly in English, have made this period the most familiar to English readers.

The best known buccaneer chief was Henry Morgan, whose command, in 1671, captured the castle of San Lorenzo guarding the mouth of the Chagres, ascended the river to Cruces, and then went by land to Panama, which at that time contained 30,000 souls. President Guzman drew up his infantry, cavalry and wild cattle in the savannahs before the city, and gave battle to the buccaneers. The latter were the victors and in the afternoon entered the town, which they found deserted and in flames. Morgan's men accomplished what British regulars, both army and navy, were never able to do. Morgan himself got away to England with the major share of the loot, and was knighted by Charles II.

Panama was almost entirely destroyed by the fire, and as the location was unhealthy and difficult to fortify, the city was rebuilt, in 1674, on its present site, five miles farther west, at the foot of Ancon Mountain. Though founded 155 years after the old city, the new Panama presents much that is strange and ancient. The ruins of the Jesuits' college, Santo Domingo church and other buildings destroyed by fire or earthquake, attract the attention of the visitor. The oldest church yet in use is San Felipe Neri, built in 1688. The university was established in 1751. The attractive cathedral was erected in 1760.

In the old Casa del Cabildo, or city hall, a congress of the people of Panama, in 1821, declared the Isthmus independent of the Spanish crown. Here also was held, in 1826, at the call of Simon Bolivar, the first congress of Americanists, really the precursor of the Pan-American Union.

The Panama Railroad was completed in 1855, and the following year, at Playa Prieta, the terminus of the road, occurred the unfortunate encounter between the passengers of the Steamship *Illinois* and the black rabble of Panama. In recent years, George Loew's Grand Hotel, fronting the plaza, has been used as a headquarters by both French and American canal companies. Most of the old fortifications have been leveled, but the seawalls still stand, against which the Pacific tide ebbs and rises to a height of from 18 to 22 feet.

The success of the buccaneers induced William Paterson, in 1698, to plant on Caledonia Bay a formidable Scotch colony, with intent to hold that pass and control the trade of both oceans. The deadly climate rapidly killed off these hardy Northmen, and a Spanish force from Cartagena compelled the remainder to evacuate New Edinburgh.

For 75 years, Nombre de Dios was the sole port of entry on the north coast of Panama. The harbor was unsheltered and dangerous when the northers blew, many vessels being cast away here. The place was a pesthole. and Bishop Berlanga, writing to the king in 1535, calls it a den of

OLD CATHEDRAL IN THE PRESENT CITY OF PANAMA

thieves and graveyard of travelers. Nevertheless, viceroys and vicequeens, high prelates of the church, and some of the most famous men and warriors of history have passed through or rested in this old Isthmian port.

Nombre de Dios was much harassed by the Cimarrones, or runaway negroes, who gathered in bands and robbed passengers and packs on the *camino real*, or king's highway. Foreign freebooters hung about the port and lay in wait for Spanish treasure ships.

In 1572, Francis Drake, with his brother and John Oxenham, landed here one night and made a fruitless attempt to rob the king's treasure-house of gold and jewels. Drake received a serious wound and his men carried him hurriedly to the boats, paying no attention to a stack of silver 70 feet long, 10 feet broad and 12 feet high.

In after years, the urchins of the town used to frighten the wits out of their parents by shouting, "Drake is coming." Sir Francis did come back again, in 1596, with a large fleet, and a land force under Sir Thomas Baskerville. The soldiers started out to take Panama, but meeting with much resistance, they turned back when about half-way over the Isthmus. The English then fired the town, and sailed west to Puerto Bello.

It was off Puerto Bello that Sir Francis Drake fell sick of a flux and died on the 28th day of January, 1596. The next day his body was placed in a leaden coffin and committed to the sea near the little island which now bears his name. Steamers to Colon pass in plain sight of the spot.

To secure a safer port and one more easily defended, the Spaniards, in 1597, moved the business of Nombre de Dios to Puerto Bello, which became the northern terminus of the overland road. The city was founded where it now stands, at the head of the bay, and surrounded by mountains. In its prime, in the time of the galleons and fair, Puerto Bello consisted of 130 houses, a custom house, governor's house, hospital, great church and convents. Besides, there were four suburbs of straw shacks, where dwelt the negro slaves and poor Spaniards. Though the climate was better than that of Nombre de Dios, yet it was hot, humid and sickly. Childbirth was uniformly fatal to both mother and child. Horses and cattle would not breed, and hens brought from Cartagena and Panama declined to lay eggs.

When the yearly fleet arrived from Spain, the city held a fair lasting two months, to which resorted merchants and traders from Panama, Lima, Cartagena, Spain and other parts, so that for the time Puerto Bello was one of the busiest marts in the world. European ships lost a half, or at least a third, of their men while lying there. During the fair a house rented for 5,000 dollars, and 1,000 crowns was paid for a shop for fifteen days. The 5,000 soldiers and sailors on the ships erected booths of sails on the plaza, to which the merchandise was drawn on sledges, and where most of the trading took place.

When the *galeones* reached Puerto Bello, the gold and silver from Peru, held at Panama, was sent over the Isthmus on packmules. Thomas Gage, in 1637, saw 200 mules in one day arrive from Panama laden with wedges of silver, which were piled up in the plaza like heaps of stones. The houses were crowded with people, the market-place and streets crammed with European goods, provisions from Cartagena and chests of gold, cacao, quian bark and bezoar stones from Peru. When the fleet sailed, the merchants departed,

and the city relapsed into the *tiempo muerto*, or dead time, when silence and humidity again reigned supreme.

To protect his bullion and provide a stronghold on the Isthmus, Philip II. constructed four castles, or forts, about Puerto Bello, the most famous of which was San Felipe defending the mouth of the harbor, called the Iron Fort on account of its great strength.

EARLY SPANISH FERRY ON CHAGRES RIVER

In spite of its defenses, Puerto Bello was taken by Francis Drake, by William Parker in 1602, by Henry Morgan in 1669 and by Coxon and La Sound in 1679. In 1739, Admiral Vernon, after whom was named Mount Vernon, the home of George Washington, captured the forts with six ships of the English navy. The next year, Vernon took the castle of San Lorenzo commanding the entrance to the Chagres River. During this conflict, known as the "War of Jenkins' Ear," England planned to capture the city of Panama, in conjunction with a fleet under Admiral Anson in the Pacific, and hold this door to the South Sea, but the project fell through.

The most important and interesting feature of Old Panama was the passenger and freight transit over the *camino real*, and by the Chagres-Cruces route. The change from Nombre de Dios to Puerto Bello on the north coast, and from the old to the present city of Panama on the Pacific side, made but a few miles difference in the length of the trans-isthmian route.

The Spaniards used to pack bars of silver over the all-land road like cordwood. It was between Panama and the Chagres River, in 1573, that the quick wit of the treasurer of Lima saved the king's tribute, as well as his own jewels, from Drake and his followers. A few months later, however, over near Nombre de Dios, the daring Englishman held up a train of 190 mules, each loaded with 300 pounds of the precious metal, and got safely away with all his party could carry. Fifteen tons of silver in bars were left behind and buried in the soil, and the Spaniards afterwards dug up the ground for a mile around about in searching for it.

OLD PANAMA AND CASTILLA DEL ORO, by Dr. C. L. G. Anderson. The Sudwarth Co., Washington, D. C. 559 pages. Price, $5.00.

As a matter of substance this study is a notable one, a deeply interesting and opportune revival of old Panama as the matrix of the new. The author avoids the modern, or steam shovel, era of Panama history, and fills the general demand for a knowledge of the less known and more attractive period of the Spanish discovery, conquest, and colonization of the Isthmus and adjacent countries. The discovery by Columbus of the Caribbean coast of Central America and Panama, his four voyages to America, his attempt to make a settlement on the Rio Belen on the Isthmus; the voyages and expeditions of Don Rodrigo de Bastidas, Alonso de Ojeda and others; the daring raids of Sir Francis Drake; the sack of the city of Old Panama by Henry Morgan—in fact all the events of the early period of Isthmian history are told in detail and read like a romance. Dr. Anderson reviews the first interoceanic routes from Tehauntepec south to Uraba, giving particular attention to surveys of the Chagres River. He calls the Chagres-Panama pass the gateway to the Pacific and the door to Asia, but warns us that this door opens in both directions and should be effectively guarded. The chapter on the early efforts for a canal is the best exposition of that subject ever written. Descriptions of Darien, Panama, and Veragua are nearly literal translations from original Spanish reports and documents. The Indians are not neglected, but are described just as found by the Conquistadores. The author has garnered his material from original sources in Spanish, French, Dutch and English, and his scholarly work will at once rank as an authority on the early period of Isthmian history. The text is illumined with maps and rare illustrations, as well as by hundreds of interesting footnotes. There is also an appendix of original documents, an extensive bibliography, and a glossary of Spanish terms. There could be no more fascinating book for the general reader and no more accurate one for the tourist bound for the Isthmus.

AMERICAN RIVERS AND THE PANAMA CANAL

By LIEUT.-COL. WM. L. SIBERT

THAT we cannot get the full benefit of the Panama Canal until we improve the rivers of the United States is the opinion of Lieut.-Col. Sibert, member of the Panama Canal Commission and Chief Engineer of the Atlantic Division of the Panama Canal. Colonel Sibert has had an extended and varied experience in the work of river and harbor improvement. He speaks with authority, therefore, whether it be concerning the great canal, the waterways of the United States, or their mutual relations.

THE Panama Canal, on account of being the cheapest transportation route between our coasts, and on account of the legislation already enacted in connection with the question of tolls, will probably be the means, directly or indirectly, of causing the American flag to fly from many ships engaged in the foreign trade and, in addition, enable the people of the United States to obtain from our rivers that use to which they are entitled and of which they have been deprived.

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The people are entitled to all economies in transportation that nature has made practicable, because on cheap transportation depends the development of industry, and when industry is fully developed all agencies connected therewith are operating at full capacity.

We often hear the statement that rivers should not be improved at government expense and made free, because the resultant cheapening of freight rates would interfere with the earnings of money invested in railroads, while, as a matter of fact, if transportation costs are materially reduced, new industries spring into existence, resulting in an increase in the business of the railroads. The character and routeing of freights may be changed, but the increase in earning capacity is a certainty because the greater part of the country can only be reached by rail. The improvement of the Great Lakes is a striking instance where such

Photo by Underwood & Underwood — IN HOSPITAL GROUNDS, COLON

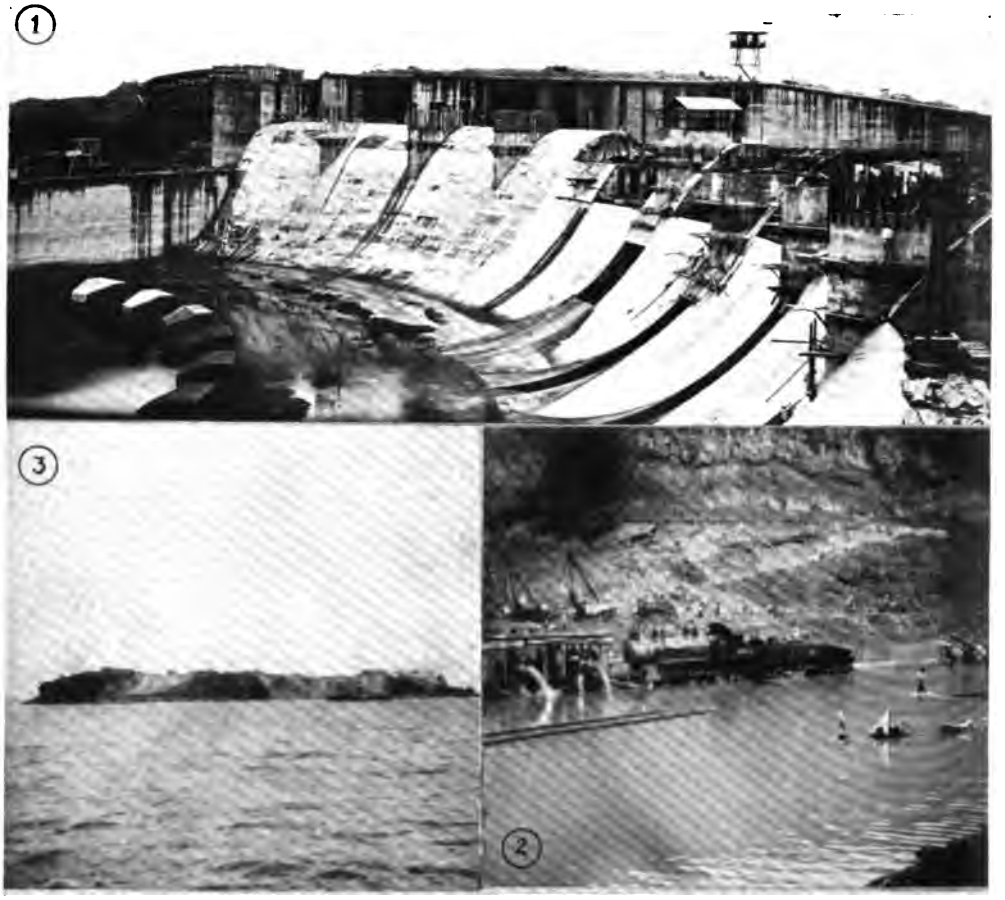
PEDRO MIGUEL LOCKS—EAST CHAMBER LOOKING SOUTH—SAFETY GATES IN BACKGROUND

a result has followed a new line of cheap transportation.

If that combination of water and rail transportation that resulted in the greater commercial prosperity did lessen the earning capacity of the railroads below a reasonable profit, it would pay the people to appropriate the money and pay the loss, because the railroads are simply an instrument in accomplishing the nation's aim—full industrial development. Possible injury to an instrument must not block the accomplishment of the main purpose. If goods can be brought together at interior river shipping points by short rail haul with a reasonable profit, such as Pittsburgh, Cincinnati, Louisville, St. Louis, Kansas City, *et cetera*, and thence shipped in large lots by river barges to other interior cities for distribution by short rail hauls, or to the seacoast for export, at less cost than such goods can be transported by all-rail haul, the country is entitled to that addition to its wealth producing capacity.

The time is fast approaching when the United States must manufacture and transport at such a cost as will enable its goods to enter the markets of the world, and that can only come about when the people enjoy the cheapest transportation practicable.

What part can our rivers play in accomplishing this result, both as regards commerce between our coasts and with foreign nations? Our country, commercially, is practically divided by the Rocky Mountains. The eastern half is so great, its industries are so varied, its transportation facilities so excellent within itself and with foreign countries, that it can live and thrive without its far western half. The Pacific Coast, however, being separated by impracticable freight rates from the markets of the eastern half of the country, and from the foreign markets bordering the Atlantic Ocean, has experienced so far only a partial, stunted growth, and nothing but cheap transportation for the ordinary commodities of commerce can make that development full. Such development will make reciprocal markets for



Photos by Victor F. Halbarth and Sebert Sinclair

1 THE SPILLWAY, GATUN 2 FLOOD RESULTING FROM SLIDE AT EMPIRE
3 NAOS ISLAND, PACIFIC ENTRANCE, TO BE STRONGLY FORTIFIED
4 WORK TRAIN IN CULEBRA CUT

both halves of our country, increase our foreign trade, and add to the wealth, power and unity of the nation.

The Panama Canal is the main link in accomplishing this, and our rivers and our railroads leading to coast points are the other. The non-use of rivers has been due to a lack of dependable navigable depths and to their isolation by the railroads. Having no feeders working in harmony with them, their business has been confined to such commerce as originated on their banks and had its market on their banks. This means that the freight offering at most places is not enough to warrant proper terminals.

The day of the packet boat for long hauls, with the depth of water practicable in most of our streams, is over, and the full economy of river transportation can only be had with towboats and barges, a barge-load or more of freight to originate and be ready to move from each landing made by towboat. The railroads in the past have distinctly discouraged any combination of rail and river transportation that would enable the river to effect an economy in transporting goods to their market.

If the proper combination of rail and water transportation cannot be brought about under the authority given by the last Congress to the Interstate Commerce Commission, it is time that water transportation companies are given the right of eminent domain where necessary to obtain suitable terminal facilities, and that they undertake to construct short-rail feeder lines concentrating freight at suitable river stations in quantities sufficient to warrant modern means for the quick and cheap handling of freights. It is thought, however, that Congress can and will cause the needed combination.

It is necessary, as a preliminary proposition in accomplishing this, that the rivers have a dependable depth all the year for suitable barge transportation. Many people who have seen the freight economies possible by utilizing our rivers

DEEPEST PART OF CULEBRA CUT—THE NOTCH NEAR TOP OF HILL ON THE RIGHT SHOWS FIRST EXCAVATION IN THE CUT BY THE FRENCH

GATUN LOWER LOCKS, WEST CHAMBER LOOKING SOUTH

have urged the completion of the projects of improvement by the time the Panama Canal is finished. But the work under such projects has not progressed at anything like the rate at which the Panama Canal work has been prosecuted. The Panama Canal work and the river improvement work have both been practically directed by men from the same corps of the Army. In the case of the Panama Canal all the money that could be properly and economically expended has been available, while in river projects that has not been the case, and in this lies the whole reason for the relative rates of progress referred to above.

Congress cannot be expected to provide at once all the money necessary to crowd to its fullest economical extent the improvement of all the rivers of the United States, and if it did it might improve some or adopt some projects of improvement that might not cause such a cheapening of freights as to warrant the cost of improvement. The great trunk streams and such tributaries as could almost be classed as trunk streams should be completely, and as quickly as practicable, improved and the work of coordinating their use in connection with the railroads studied and tried out, from which it could be judged what other tributaries could be profitably brought into the system if improved, and when the decision is reached to improve such stream, do the work as quickly, as economically practicable.

No one can tell the new industries that will come into existence on account of the combination of the Panama Canal and the river transportation of our country, when the depth of water is dependable and the proper combination of water and rail haul is accomplished, but the necessity of finding foreign markets for more and more of our manufactured articles each year, will cause this question to grow in importance because our competitors are already practicing all economies in bringing together the raw material for manufacture and the shipment of the finished product to its market.

THE TWO GREAT CANALS

By HANNIS TAYLOR

HERE is a distinct contribution to the American side of the argument over Panama Canal tolls, contributed by a leading authority on International Law. Mr. Taylor, who is a North Carolinian by birth and was at one time U. S. Minister to Spain, is the author of many notable works in that line, having received the degree of LL.D from the Universities of Edinburgh and Dublin for his masterly "History of the English Constitution."

WHEN in the Senate of the United States a motion was made on July 29, 1852, to proceed to the consideration of a bill authorizing the exploration of the courses of navigation used by vessels proceeding to and from China, William H. Seward, then a Senator from New York, said that the settlement of the Pacific Coast was still in a state of sheer infancy, despite the fact that steady streams of emigration were then flowing thither from every State eastward of the Rocky Mountains, from Australia, from the South American States, from Europe and from Asia. That movement, he said, was not a sudden or accidental one, but one for which men and nature had been preparing for nearly four hundred years. During that time merchants and princes had been asking how they could reach the East cheaply and expeditiously, that intercourse and commerce might be established between its ancient nations and the newer ones of the West. To those objects De Gama, Columbus, Vespucci, Cabot, Hudson and other navigators had devoted their talents, their labors and their lives.

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Thus, with the eyes of a seer, he beheld the most sublime spectacle in the history of humanity—the reunion of the two civilizations, which, after having parted on the plains of Asia thousands of years before, and after traveling ever afterwards in opposite directions around the world, met and mingled again on the coasts and islands of the Pacific. Mastered and overcome by the great event, Seward exclaimed: "Who does not see that every year hereafter European commerce, European politics, European thought and European activity, although actually becoming more intimate, will nevertheless ultimately sink in importance, while the Pacific Ocean, its shores, its islands and the vast regions beyond will become the chief theatre of events in the world's great hereafter?"

By the necessities of her geographical position Venice was forced to become a maritime power and to look to the East. The Venetians extended their commerce beyond Greece, Syria and Egypt; they did some trade even with India.. Before the Crusades ended it became usual for the Crusaders to take the fleets of Venice or Genoa to cross the Mediterranean, which cities alone had fleets of transport galleys in those days. The commercial supremacy of Venice thus built up was finally undermined through the discovery by the Portuguese of the route to India around the Cape of Good Hope, which enabled European traders to see India for themselves and to examine what were its products and its wants. Thus ships could leave the ports of their owners in Europe with a reasonable hope of reaching, via the Cape, the places to which they were destined, without trans-shipment or other intermediary obstacle.

The Portuguese, who thus gave to Europe a "new world" in the East, obtained Macao as a settlement from the Chinese as early as 1537, and their trading operations followed close on the discoveries of their navigators on the coast of Africa, in India, and in the Indian Archipelago. In our own time the Cape of Good Hope route, which 400 years ago destroyed the com-

mercial supremacy of Venice, has become involved in a losing fight with the Suez Canal for the trade of the Orient. Another blow will be given in the same direction by the Panama Canal, with its saving of nearly 5,000 miles for American steamers, which will undoubtedly divert practically all our Australian traffic from the Good Hope route. And much European traffic will probably prefer the Panama route to the Good Hope route, where coaling stations are few and far apart and prices generally rather high.

At the end of 1910 the cash expenditure on the Suez Canal amounted to $126,642,406, the company having an outstanding capital obligation of $92,484,544. During that year the Suez Canal handled 4,533 vessels having a total tonnage of 16,581,898 net tons; the total receipts of the company for its canal service amounting to $25,168,400. Payments for fixed charges and for retiring capital obligations amounted to $6,072,602, while the cost of operating and maintaining the canal, plus appropriations to depreciation reserve, was $3,857,405. The balance of profits for 1910 was $15,908,419, the company paying a dividend of 31.6 per cent. to its stockholders.

Suez Canal tolls are always reduced whenever the dividend exceeds 25 per cent. They are now $1.30 per net ton on ships with cargo and 82 cents per ton on ships in ballast, with a charge of $1.93 each for passengers older than twelve, and half as much for those younger, children under three going free.

In the construction of the Panama Canal the American people will expend at least $375,000,000, about three times the capital cost of the Suez Canal. The annual charge for this vast investment will be at least $12,187,500, to which must be added the cost to operate and maintain, which will be at least $3,857,405. Such a cost in the case of the Panama Canal would make it an annual charge on the American people of say $16,045,000.

That our vast expenditure will be an immense benefit to European and Japanese ship-owners there can be no doubt. From Europe the Panama Canal will save 6,000 miles on the present sailing distance to our Pacific Coast ports, and 2,600 miles to points on the West coast of South America. While it will save nothing on the Suez route from Europe to Asia and Australia, from New York it will shorten the voyage to Hong Kong by 89 miles; to Shanghai by 1629 miles; to Melbourne by 2,656 miles, and to Yokohama by 3,729 miles.

A great readjustment of the ocean traffic routes of the commercial world, affecting directly or indirectly more than half the countries on the globe, will surely be brought about by the opening of the Panama Canal. Next to ourselves, the republics situated along the West coast of South America will be most benefited, hampered as they are now because the only route available for them is the long and dangerous route by the Straits of Magellan, or the shorter but costly route over the Isthmus of Panama, with its double handling of freight.

In what way is our vast expenditure at Panama to become of pecuniary benefit to ourselves; in what way are we to make it an effective means to restore our American merchant marine to its ancient and rightful place on the high seas? Mr. C. M. Keys has well said in a recent number of *The World's Work*:

"The Panama Canal will almost certainly, in time, become the highway for manufactured goods moving from the industrial centres of the United States into the Orient. Whenever a stream of manufactured traffic moves in one direction, a backward stream is almost sure to be created. In all human probability, so far as Oriental trade in finished products is concerned, the Atlantic and Gulf ports will steadily increase in both export and import business. To guess whether New York or New Orleans, or some other port, will be the chief beneficiary of this change of route is little better than prophecy at this moment, but there is no reasonable ground for doubt that the Gulf ports will be stronger in their competition with New York than they ever were before so far as Oriental traffic is concerned. It is not all imagination, this boast one hears in the cities of the South, that in the years to come the headquarters of America's Oriental traffic may be along the Southern coast."

Between the Canal and the transcontinental railroads a sharp competition for traffic is sure to arise. In a decision handed down last year by the Interstate

THE SUEZ

Commerce Commission the inevitable conflict was indicated in the following terms: "The railroads, moreover, must soon meet with a competition by water more intense than any they have heretofore suffered; for within three years another route, one more important, searching, and determinative in its effect upon railroad rates than any other, will be opened—a route all water by way of the Panama Canal. The cutting of this canal will in effect bring the Straits of Magellan 3,500 miles to the Northward, and with modern steamships it is estimated that San Francisco will by water be removed from New York but fourteen days."

Thus the Panama Canal is to reopen a struggle between sea and land transcontinental traffic which really ended in 1885, when the Sunset-Gulf route demonstrated its power to drive the clipper ships of America from the sea, and to sterilize the Pacific Mail, thereby rendering the Panama Railroad more of a curiosity than a connecting link in a great scheme of transportation. Between 1885 and 1891 the Sunset-Gulf route carried nearly ninety tons out of every hundred tons of freight that moved from the Atlantic Seaboard to California. Thus the domination of the railroads between East and West was established by the man-made lines of steel which became the great trade routes across the continent.

Under present conditions American-built and manned ships cannot profitably compete with foreign ships. British and German-built steamships cost no more than two-thirds as much as ships constructed in American yards. A good illustration is offered by the Atlantic Transport Line Steamer *Maine*, built at Sparrow's Point, Md., at a cost of $1,010,135, while her identical sister ship, the *Michigan*, was built in England at a cost of $647,640. Besides, it costs more to operate ships American-manned.

As a nation we are paying very dearly for having permitted American ships to be driven almost entirely out of international trade. In 1861, American ships in foreign trade had an aggregate tonnage of 2,496,894 tons, almost three times as much as now. In the seventies American ships carried more than 30 per cent. of the imports to the United States. For 1911 it was only 10.2 per cent. Of our export trade for that year only 7.5 per cent. was done in American ships. Of the total import and export trade for 1911 American vessels handled only 8.7 per cent. In 1870 they carried 35.6 per cent. of such trade. For the fiscal year 1911 American ships carried only $280,206,464 or 8.7 per cent. of the total sea-borne commerce of the country, which amounted for the year to $3,210,642,970.

It has been estimated that the sea-

borne foreign commerce of the country paid American ship-owners about $11,500,000 in a year, while it yielded to foreign ship-owners some $135,500,000 during the same period. On June 30, 1911, the aggregate gross tonnage of American ships in foreign trade was only 863,495 tons, or 11.3 per cent. of the total gross tonnage of the entire American merchant marine, the great bulk of which was engaged in coastwise and Great Lakes trade between American ports, a trade from which foreign ships are excluded by federal law.

Can we wonder that under such conditions American enterprise shrinks from competitive operations on the high seas; can we wonder why American ships have been withdrawn from international trade, where they are subject to additional handicaps by reason of contributions made by foreign governments directly to the development of their own merchant marines?

Government-compiled figures place the total of such payments upon the part of foreign nations in support of and encouragement to their merchant marines at $46,907,220 a year. Great Britain pays in postal and admiralty subventions about $9,700,000, although only some three per cent. of British shipping in foreign trade shares in this bounty. France pays graded bounties on all vessels built in French shipyards, besides navigation allowances and mail subsidies, in all about $13,425,000 a year. During the fiscal year ended March, 1909, Japan paid $6,183,000 in aid of her shipping; and under such encouragement the Japanese merchant fleet grew from 360,695 tons in 1895 to 1,288,053 tons in 1909.

Putting aside the idea of shipbuilding bounties or of subsidies to American steamship lines, how can the Panama Canal be employed so as to bring the largest benefits to the American people by promoting their interests on sea and land? The Panama Canal should be so managed as to open a way to encourage all American shipping without discrimination or favor; it should be made to give the American merchant marine an important advantage in world commerce. In a masterful address on this subject, delivered on May 14, 1912, Mr. Samuel H. Barker, financial editor of the *Philadelphia North American*, said:

"Sentiment and false generosity should be thrust aside by the American nation in this matter. A national business policy should be inaugurated with the opening of the Panama Canal. This huge project will be purely an American accomplishment. The American people have paid all the cost; they must maintain and operate the Canal, and, under these circumstances, they have a just right to claim and take for themselves its larger benefits.

"Give to any and all American-built and manned ships free use of the Panama Canal. Levy tolls upon all foreign vessels availing of the great waterways. In this way can the American Canal promote American interests. Let the tolls charged foreign ships passing through the Panama Canal be, say, those levied by the Suez Canal. That waterway is owned by a company and is under the virtual control of the British government which, since 1875, has owned 176,602 of the 379,421 shares of the capital stock, acquired at a cost of $19,855,320.

"The Suez Canal was opened in 1869. It is 103 miles long, and an average of nearly seventeen hours is required for passage through it. At a cost of $19,300,000 the canal is being widened to 147.6 feet and deepened to 36.1 feet, the present depth being only 28 feet. The Panama Canal will carry 41 feet of water and have a channel from 300 to 1000 feet wide. Ships will pass through the American Canal in ten to eleven hours.

"It is calculated that the most advantageous handling of the world's present commerce will route through the Panama Canal the first year ships to an aggregate tonnage of 8,328,000 net tons. That would be about one-tenth the estimated traffic capacity of the canal. * * Freedom of American ships from tolls at the Panama Canal will also enable that costly national undertaking to confer the largest measure of benefit upon the people of the United States. So will it be possible for American ships to transport coast-to-coast freight at lowest rates. It is believed that general cargo goods can be carried from Philadelphia to San Francisco for $5 to $7 per ton. Transcontinental railroads cannot meet such rates.

"With the Panama Canal made free to American ships, while reasonable tolls are charged to foreign vessels using it, this $375,000,000-work can become a means of

restoring the American merchant marine to its rightful place and thus save to the American nation tens of millions of dollars now paid foreign ship-owners every year for transporting American commerce, and also of reducing the delivery cost within the United States of all kinds of goods now transported across the country by rail."

When the Hay-Pauncefote treaty of November 18, 1901, was promulgated on February 22, 1902, what is now known as the Canal Zone was foreign territory. By the treaty made between the United States and Panama on November 18, 1903, that zone became the domestic territory of this country for all the purposes of international law. A radical change was thus wrought in the conditions existing at the time the Hay-Pauncefote treaty was made. The leading English authority on international law, Hall, has thus described the conditions under which treaties cease to be obligatory:

"Neither party to a contract can make its binding effect dependent at his will upon conditions other than those contemplated at the moment when the contract was entered into, and on the other hand a contract ceases to be binding so soon as anything which formed an implied condition of its obligatory force at the time of its conclusion is essentially altered. If this be true, and it will scarcely be contradicted, it is only necessary to determine under what implied conditions an international agreement is made. When these are found, the reasons for which a treaty may be disregarded will also be found."

In my own work on International Law, I have stated my concurrence in Hall's view in this form: "Sec. 394. *A treaty may become voidable through subsequent events.* After the validity of an international agreement has been firmly established by the concurrence of such antecedents, it may become voidable through the operation of subsequent events which might not have such an effect in the case of private contract. So unstable are the conditions of international existence, and so difficult is it to enforce a contract between states after the state of facts upon which it was formed has substantially changed, that all such agreements are necessarily made subject to the general understanding that they shall cease to be obligatory *so soon as the conditions upon which they were executed are essentially altered.*"

Under that rule, which is a part of the settled international law of the world, the radical changes in subsequent conditions wrought by the transfer of the sovereignty over the Canal Zone to the United States rendered the Hay-Pauncefote treaty voidable, and subject to modification or abro-

Photo by Sebert Sinclair

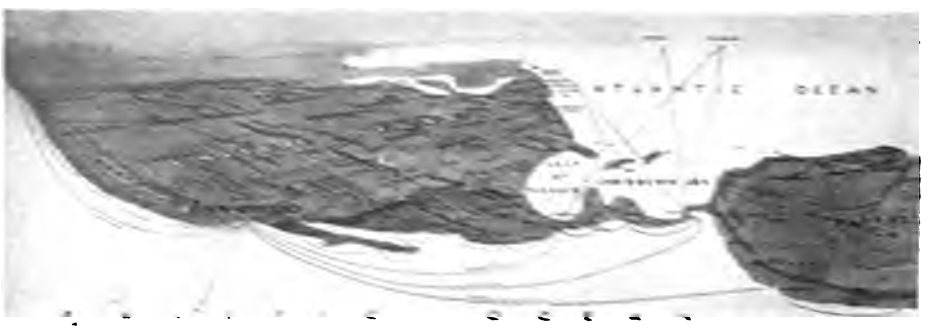
PANAMA

gation, no matter what its original meaning might have been. "That a treaty is no more the supreme law of the land than is an act of Congress is shown by the fact that an act of Congress vacates *pro tanto* a prior inconsistent treaty" (Moore, Int. Law, Sec. V., p. 166). As the Hay-Pauncefote treaty became voidable through a subsequent change in conditions, Congress had a perfect legal and moral right to modify it by legislation, no matter what its original meaning may have been.

But it is entirely unnecessary to resort to that line of argument, unanswerable as it is. Great Britain has not a foot to stand on when the treaty as written is fairly construed. By the treaty of November 18, 1901, it was agreed that the Clayton-Bulwer treaty of April 19, 1850, should be superseded, to the end that the Panama Canal might be constructed under the auspices of the United States without impairing the "general principle of neutralization," which barred the United States from "any exclusive control over" any isthmian canal or railroad which might ever be built, and from "any rights or advantages in regard to commerce or navigation through the said canal which shall not be offered on the same terms" to Great Britain. Under the existing treaty the United States enjoys "the exclusive right of providing for the regulation and management of the canal." It has provided that the canal "shall be free and open to the vessels of all nations on terms of entire equality, so that there shall be no discrimination against any such nation or its citizens or subjects in respect to the conditions or charges for traffic, or otherwise."

The right of the United States to control the entire subject matter is recognized in the treaty of November 18, 1903, between the United States and Panama, creating the Canal Zone, in the proviso that no costs shall be imposed on vessels, or upon the cargoes, crews, or passengers of vessels using the canal "except such tolls and charges as may be imposed by the United States for the use of the canal and other works." Under our navigation laws, existing when the Hay-Pauncefote treaty was made, foreign vessels were prohibited, then as now, from engaging in trade between American ports. Thus, in making the Panama Canal free to American vessels engaged in such trade, there can be no discrimination, for they run in competition with no foreign vessels.

When we consider that we have performed this immense engineering feat at our own risk and expense, without the least help from any foreign nation; when we look upon our own canal, built across our own territory at a cost of nearly $400,000,000—three times the cost of the canal at Suez—the British contention that we cannot, without her consent, regulate our own coastwise traffic, in which no foreign nation can participate, becomes grotesque, indeed. No wonder that the private interests antagonistic to the canal cannot stimulate the British Foreign Office to make a real, whole-hearted protest. As the British claim is in every aspect repugnant to justice and common sense, it will die of inanition; it can never rise to the dignity of a real international controversy.



SAN DIEGO, ON PANAMA BAY, NEAREST PORT ON THE WEST COAST TO PANAMA. THIS CITY WILL CELEBRATE IN 1915 WITH EXPOSITION THE OPENING OF THE CANAL

THE PLEASURE AND HEALTH OF MOTOR BOATING

By C. A. MORGAN

MR. MORGAN *is the advertising manager of the Cleveland Auto Boat Manufacturing Company, of Cleveland, Ohio, and has high rank in his profession. The way he presents his subject and the data he gives are of interest both to the "motor bug" and layman.*

CURIOSITY in seeing an automobile party touring through several states, or from coast to coast for pleasure, is a thing of the past. Were it possible for the motor boat in its various types to pass along our streets, many of us would suddenly realize that with the increase of automobiling, so also has motor boating increased, until now, upwards of 300,000 are in use in the United States alone, 75% of which are for pleasure only. And this large number is increasing 20% each year.

One only needs a few hours' experience in a motor boat, enjoying the fresh air, the changing scenes, as it glides over the water, with a party of friends, or the fast exciting spin through the waves in a speed-launch, with no dust in the air, or the familiar "arm of the law" standing in the middle of the road, demanding that you stop until you are relieved of your burdensome change, to become intoxicated with its pleasures, and an earnest desire to become the possessor of a launch as early as possible.

The moderate priced family launch is in more general use, and is found in numbers in all large cities where there are water facilities. New York, alone, has upwards of 10,000 power boats of various types; Boston, 4000, and other large cities in proportion to their size, varying in price from $200 up into thousands. Averaging the price at about $600 per boat would give a total of $18,000,000 invested in motor boats.

Not only have large sums been invested in the launches, but commodious and attractive club houses have been built by the hundreds, many of them on an expensive scale, not only providing means for temporary accommodation, but being arranged for entertainment on the same plan as any city club. Hundreds of small lakes throughout the country, whose shore values were practically worthless until the advent of the motor boat, have suddenly become popular resorts with attractive cottages and bungalows around them, to each one of which the motor boat is the most important part of the equipment.

The improvements in the Erie Canal through New York State, and the various channels connecting the inland waterways along the Atlantic Coast with the several canals connecting, indirectly, Lake Michigan with the Mississippi River, make it possible to cruise around and across the entire eastern section of the United States. The projected canal from Lake Erie to the Ohio River will form another important connecting link in the chain of beautiful rivers and lakes that are lined on

OUT FOR THE AFTERNOON IN MOTOR RUNABOUT. THE PICTURE IS USED THROUGH COURTESY OF AUTOCRAFT CO.

CLUBS

One of the many palatial nests of the "water bug." It is estimated that there is nearly $500,000,000 invested in pleasure craft and club houses in this country. The total which the Government has appropriated for waterway improvements is $700,000,000.

HYDROPLANES

The boating season just drawing to a close was a most notable one; records of speed and endurance were numerously smashed. The hydroplane is showing wonderful development, but much is yet to be desired for reliability and endurance of this high-speed craft.

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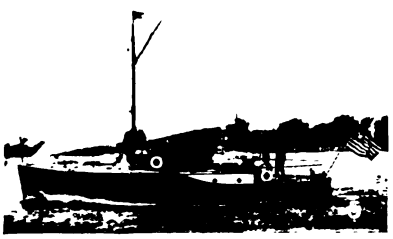
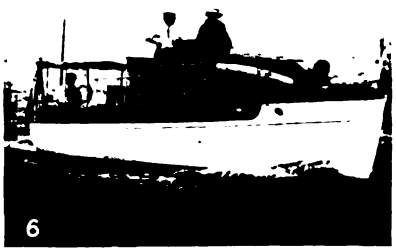
Smaller pictures used through courtesy of "Motor Boating"





SPEEDY ONES FOR 1912

MOTOR CRAFT WITH EXPRESS-TRAIN SPEED

1 The fastest boat in the world—*Baby Reliance III.*, owned by J. S. Blackton of New York—which made a new world's record of 53.73 miles per hour, going down stream on the Mississippi. The craft is a 20-foot hydroplane, and its power plant is a 275 horsepower VanBleck engine.

2 Twenty-foot hydroplane, *Baby Reliance II.*, also owned by J. S. Blackton, powered with an eight-cylinder 150 horsepower Sterling engine. She was the fastest of the American cup defenders, and averaged 47.37 miles over a five-mile course.

3 *Tech, Jr.*, owned by Colonel Dupont of Wilmington, Del., figured prominently in speed trials. Note rudder amidships, which is said to prevent skidding.

5 *Dream*, winner of the 719-nautical-mile race from Philadelphia to Bermuda. She is 40 feet in length with 18 horsepower standard engine.

6 *Thistle*, winner of many cruiser races in 1912. She is 40 feet long and has a 40 horsepower Sterling engine.

each side with delightful scenery and an occasional large city, in all of which there are club houses for yachtsmen (for every city of any importance has one or more) where the touring parties are always welcome. The yachtsman's cap, wherever it is found, is the insignia of good fellowship, and one is impressed on visiting the various clubs, that each is trying to outdo the other in hospitality.

The same general interest in motor boating exists on the Western Coast, but is confined more or less to local districts, as in Puget Sound, San Francisco Bay and other large protected harbors and inland lakes, the conditions for extended cruising, as in the East, being limited to such bays and the connecting rivers.

Like all organizations that are formed principally for sporting and pleasure, the boat clubs have their quota of members who are imbued with the spirit of excitement, and racing events are held in districts, in which several clubs take part, and the friendly rivalry that exists has resulted in the development of specially constructed racing launches that compare favorably in speed with the average automobile. In several sections of the States, associations of clubs are formed for the purpose of conducting such events, and large sums of money are spent each year in the building of both engines and hulls for the special occasions, for the launches that enter the highest speed class. At such meetings, races are usually held for the various classes—the family launch, the runabout and cabin cruisers; but interest always centers in the speed boat races, in which man's skill has been taxed to the utmost, not only in the building of the boat and engine, but the operation as well.

Courtesy Autocraft Co.

CABIN CRUISER, DESIGNED BY FREDERICK K. LORD, N. A.

The hydroplane type, as shown on opposite page, at present holds the "blue ribbon" as queen of the racers, as there are a number of them that have a record of approximately fifty miles per hour.

Another notable and extremely important feature in motor boat racing, as compared with all other races of a similar form, is the almost total absence of fatalities. No form of racing is more exciting or exhilarating, and while there are occasional accidents to boat or motor, there are no records of loss of life or injury in connection with them.

In commercial life, motor craft is coming into prominence, and thousands are now in use plying their different forms of trade, excursion boats, ferry and fishing boats, etc., stimulated in the beginning by that old longing for the pleasure of water sports, which played its important part in the truancy of youth that we all remember so well, and bringing with it those natural instincts for Nature's greatest health preserver, "outdoor life in the pure air."

Due credit must be given to the improvement of waterways, which has played its part in this progress. Not only have various forms of protection and guidance been provided in adequate waterways, but beautiful rivers and valleys, unnavigable on account of their various obstructions, have been made accessible for boating. A striking instance of this is in Texas, on the Colorado River, known for its great size and picturesque scenery. The city of Austin has recently constructed an immense dam across the river, which provides ample water adapted to motor boating, for a continuous stretch of forty miles, and great preparations are now being made for the celebration of its completion. The same may be said of Indianapolis, Ind., which, until recently, boasted of only a small stream running through its suburbs, which is now a navigable stream dotted with cottages on either side and boats on the water.

Jas. B. Hammond, the millionaire typewriter manufacturer, at the age of seventy-three, started on a several years' cruise in his beautiful launch, *Lounger II.*, claiming to have at last discovered the "Fountain of Youth," and, judging from the vast numbers who are following his example, we are led to believe his statement correct.

WINNERS IN IMPORTANT MOTOR BOAT RACES, 1912*

BOAT	OWNER	EVENT	MILES	TIME
Baby Reliance I	J. S. Blackton	Mississippi Valley 20-foot	15	34–16
Baby Reliance I	J. S. Blackton	Mississippi Valley 32-foot	20	35–00
Baby Reliance I	J. S. Blackton	Mississippi Valley 26-foot	20	23–29
Baby Reliance III	J. S. Blackton	Mississippi Championship	——	34–27
Respite	V. C. Pedersen	New York-Albany	235	30–41–30
Thistle	J. H. Wallace	New York-Block Island	100	10–45–00
Dream	C. L. Lagen	Philadelphia-Bermuda	719	104–29–5
Alfred S.	H. Soldner	New York-Cornfield	183†	27–59–12
Marguerite	A. B. Cortledge	Chesapeake Bay	200	14–28–00
Chelwood	R. K. Lennig	Delaware River	196†	24–15–35
Baby Reliance II	J. S. Blackton	Chicago 26-foot	——	0–20–46
Chicago II	E. J. Richards	Chicago 32-foot	14	0–24–14
Baby Reliance II	J. S. Blackton	Chicago 40-foot	18	0–26–50
Baby Reliance II	J. S. Blackton	Wrigley Championship	25	0–35–49
P. D. Q. II	A. G. Miles	Gold Challenge Cup	32	0–52–12
Heloise	W. G. Gooderham	Great Lakes Championship	25	——
Full Moon	K. Walkem	Pacific Long Distance	150	23–31–30
Vita, Jr.	Mrs. J. S. Blackton	Red Bank Championship	20	48–09
Vita	Mrs. J. S. Blackton	Class A, Nat'l Championship	30†	1–23–23
Big Balaam	F. Bailey	Class B, Nat'l Championship	30†	1–13–22
Peter Pan V.	J. Simpson	Class C, Nat'l Championship	30†	0–53–16
Avis	F. C. Havens	Motor Yacht Championship	22½†	1–56–41
Peter Pan, Sr.	J. Simpson	Cabin Launch Champ. E	22½†	1–27–57
Alfred S.	H. Soldner	Cabin Launch Champ. F	22½†	3–12–50
Valiant II	J. Sauer	Open Launch Champ. G	22½†	2–55–17
Elise	T. Hick	Open Launch Champ. J	22½†	2–23–40
Baby Reliance II	J. S. Blackton	British Internat'l 1st Race	30†	0–48–39
Maple Leaf IV	M. Edgar	British Internat'l 2d Race	30†	1–06–25
Maple Leaf IV	M. Edgar	British Internat'l 3d Race	30†	0–47–46
Swastika	——	Pacific 20-foot	20	0–37–05
Oregon Wolf	J. Wolff	Pacific Free-for-All	30	0–46–20
Vogler Boy	——	Pacific 26-foot	20	0–50–43
Baby Reliance II	J. S. Blackton	Great Lakes 32-foot	20	0–39–35
Baby Reliance II	J. S. Blackton	Great Lakes Free-for-All	20	0–43–49
Baby Reliance II	J. S. Blackton	Interlake Championship	25	0–45–25
Gadfly III	H. B. Greening	International Handicap	15	0–40–31
Al Parnel, Jr.	R. Smith	Delaware River Championship	——	1–18–03

†Indicates nautical miles.

WINNERS IN IMPORTANT SAILING RACES, 1912*

BOAT	OWNER	CLUB	MILES	TIME
Gray Jacket	F. C. Noble	Atlantic	6	1–40–43
Careless	R. Rummell	Atlantic	6	1–51–48
M. & F. H.	Camp & Merchant	Atlantic	6	1–43–33
Mouse	R. Dingman	Atlantic	4	1–08–18
Nepsi	J. Deforest	Seawanhaka	——	5–14–43
Rowdy	H. S. Buell	Knickerbocker	10	1–46–55
Pinti	W. Beam	Knickerbocker	10	2–13–48
Festina	A. B. Alley	Knickerbocker	10	2–03–19
Dodo	A. C. Andrews	Knickerbocker	10	2–17–57
Vandalia	W. B. Duncan, Jr.	Knickerbocker	10	2–01–14
More Joy	P. V. Giffin	Knickerbocker	10	1–53–54
Mlle. Boss	W. C. Linderman	Knickerbocker	10	2–19–32
Cliphora	C. D. Mallory	Knickerbocker	10	2–03–42
Alert	R. B. Budd	Knickerbocker	10	1–49–35
Red Wing	Loewry & Grace	Knickerbocker	10	1–58–42
Amanita	A. E. Fountain	Knickerbocker	10	2–05–39
Ada	L. Price	Knickerbocker	10	2–11–03
Little Dipper	G. A. Corry	Knickerbocker	6	2–09–22
Hornet	G. Paxton	Knickerbocker	6	2–33–01
Nereid	G. Fuller	Knickerbocker	6	2–77–20
Tautog	G. G. Fry	Knickerbocker	6	2–58–30
Go Go	B. A. MacKinnon	Knickerbocker	6	2–11–12
Gray Jacket	F. C. Noble	Bensonhurst	12	2–23–28
Joy	Le Sauvage & Geer	Bensonhurst	12	2–39–31
Careless	R. Rummell	Bensonhurst	6	1–35–21
M. & F. II	C. M. Camp	Bensonhurst	6	1–39–34
Pike	R. W. Rummell	Bensonhurst	8	2–01–26
Suelew	E. F. Luckenback	National	6.3	1–02–51
Gunda	W. H. Hall	National	6.3	2–30–30
Mouse	R. E. Dingman	National	12	1–31–24
Zurah	Henry Doscher	Lloyds Harbor	——	3–41–00
Constance	C. L. Dane	Eastern	20	2–53–00
Handy Andy II	Harold Spink	White Bear	——	1–16–00
Butterfly	Stuart Markoe	White Bear	——	1–17–45
Imp	S. L. Landon	Seawanhaka-Cor	——	1–35–45
Vandalia	W. B. Duncan, Jr.	Indian Harbor	——	- - -
Medora	H. G. S. Noble	Indian Harbor	——	——
Corinthian	H. C. Smith	Manhasset Bay	15¾	5–47–28
Hus	W. H. Busk	Manhasset Bay	15¾	5–14–51
Daffodil	D. H. Morris	Manhasset Bay	15¾	6–00–49
Duchess	C. Ratsey	Manhasset Bay	9	5–31–55
Mist	H. T. Hornidge	Manhasset Bay	9	6–07–00
Festina	A. B. Alley	Manhasset Bay	9	5–27–40
Natoma	W. F. Clark	Manhasset Bay	9	5–17–58
Kanaka	W. H. McHugh	Manhasset Bay	9	5–39–07
Scylla	E. A. Sierch	Manhasset Bay	9	5–27–39
Curlew	C. L. Willard	Manhasset Bay	9	5–19–30
Little Dipper	G. A. Corry	Manhasset Bay	6	3–26–40
La Rochelle	R. H. Waldorf	Manhasset Bay	6	3–42–59
Irolita	E. W. Clark	Larchmont	30.5	2–36–21
Miladi	Geo. W. Scott	Larchmont	23	3–14–31
Winsome	E. T. Hall	Larchmont	30.5	2–56–28
Medora	H. G. S. Noble	Larchmont	23	3–01–26
Cara Mia	S. Wainright	Larchmont	11	1–53–18
Alera	J. W. & G. P. Alker	Larchmont	15¼	2–00–07
Daffodil	A. H. Morris	Larchmont	11½	2–01–15
Essex	J. L. Mitchell	Larchmont	11	2–12–03
Duchess	C. Ratsey	Larchmont	11	2–05–45
Amada	B. R. Stoddard	Larchmont	11	2–08–39
Natomah	W. F. Clark	Larchmont	11	2–19–55
Kanaka	W. J. McHugh	Larchmont	11	2–32–23
Whiff	W. R. Manny	Larchmont	11	2–22–09
Turquoise	J. S. Morgan, Jr.	Larchmont	11	2–36–09
Scylla	E. A. Sierch	Larchmont	11	2–37–26
Cynosure	H. Ford	Larchmont	5½	1–37–31
LaRochelle	F. W. Waldorf	Larchmont	5½	1–42–01
Tautog	G. G. Fry	Larchmont	5½	1–47–18
Hamburg	W. H. Voth	Larchmont	11	3–17–19
Gray Jacket	F. C. Noble	New York Yacht Club	12	1–54–55
Joy	Le Sauvage & Geer	New York Yacht Club	12	2–01–15
Careless	R. Rummell	New York Yacht Club	12	2–13–47
M. & F. II	C. M. Camp	New York Yacht Club	12	2–18–20
Mouse	R. E. Dingman	New York Yacht Club	8	1–31–03
Tautog	G. G. Fry	Manhasset Bay	6	5–02–17
Okee	J. A. Mahlstedt	Manhasset Bay	6	4–20–14
Go Go	B. A. McKinnon	Manhasset Bay	6	3–01–30
Momo	W. E. Butler	Edgewood	–	2 56 04
Molly	Oscar Howes	Edgewood		2 47 21

Gilt Edge	W. E. Simmons	Edgewood	—	2-45-14
Ruhe	Peckham	Edgewood	—	2-02-50
Dorothy	W. H. Wood	Edgewood	—	1-41-00
Spider	Hendon Chubb	Atlantic	12.5	2-21-03
Joy	Le Sauvage & Geer	Atlantic	12	2-25-50
Careless	R. Rummell	Atlantic	12	2-19-22
Suffrugette	Platt & Tiemann	Atlantic	8	1-05-45
Cyric	C. L. Atkinson	Atlantic	12	2-21-14
Killie	B. Jacobs	Stamford	6.5	1-51-03
Irolita	E. W. Clark	New York Yacht Club	23⅞	2-23-50
Aurora	Cornelius Vanderbilt	New York Yacht Club	23⅞	2-40-33
Medora	H. G. S. Noble	New York Yacht Club	18¼	2-18-24
Cara Mia	S. Wainwright	New York Yacht Club	18¼	2-48-46
Nepsi	J. Deforest	New York Yacht Club	18¼	2-52-20
Moira	Clarkson Cowl	New York Yacht Club	15¼	3-13-00
Picayune	Al. Chase	Corinthian	—	1-05-00
Lolita	C. H. W. Foster	Corinthian	—	1-58-00
Amoret	H. S. & C. B. Wheelock	Corinthian	—	1-51-21
Tobasco	J. S. Proctor	Corinthian	—	2-28-17
Dorothy	B. L. Bachelder	Corinthian	—	2-10-20
Saracen	R. Winsor, Jr.	Beverly	8⅜	1-50-31
Fudge	Beeman	Lakewood	7	2-33-18
Jerry	H. Spalding	Lakewood	4½	1-29-33
Killie	B. Jacobs	Stamford	6½	1-22-35
Istalena	Geo. M. Pynebon	New Rochelle	21¼	2-44-55
Cara Mia	R. L. Cuthbert	New Rochelle	11½	2-38-08
Caprice	R. N. Ellis	New Rochelle	15½	2-44-08
Daffodil	A. H. Norris	New Rochelle	11½	2-40-52
Sue	F. Ewing	New Rochelle	11½	2-36-38
Amada	B. R. Stoddard	New Rochelle	11½	3-37-54
Luelew	E. F. Luckenback	New Rochelle	11½	2-36-03
Maryolia	A. F. Bradley	New Rochelle	11½	2-48-38
Hamburgh II	M. M. Goldschmidt	New Rochelle	11½	2-43-31
Natoma	W. F. Clark	New Rochelle	11½	2-37-15
Ogeemah	A. B. Clements	New Rochelle	11½	1-52-57
Scylla	E. A. Sierch	New Rochelle	7¾	1-49-31
Turquoise	J. S. Morgan, Jr.	New Rochelle	7¾	1-43-28
Argus	L. Parsons	New Rochelle	7¾	1-54-22
Snug	L. Huntington	New Rochelle	7¾	2-02-48
Loon	A. W. Knapp	New Rochelle	7¾	1-48-52
Ivey	C. C. Converse	New Rochelle	7¾	2-10-20
Go Go	B. A. MacKinnon	New Rochelle	Special	0-54-47
Joyant	Indian H. Z. Club	Manhasset	16	2-34-24
Cara Mia	American Yacht Club	Manhasset	16	3-09-06
Alice	G. Davis	Atlantic	12	2-10-13
La Cubana	J. H. Ives	Atlantic	12	2-28-45
Gunda	W. H. Hall	Atlantic	9.6	2-12-43
Cyric	C. L. Atkinson	Atlantic	9.6	2-03-55
Mouse	R. E. Dingman	Atlantic	8	1-45-39
Chewink	O. W. Swenson	Winthrop	—	1-22-35
Stinger	W. O. Gay	Nahant Doris	—	1-17-40
Curlew	B. Wilson	Jamaica Bay Y. R. A.	14	2-40-10
Elvira	J. Anderson, Jr.	Jamaica Bay Y. R. A.	14	2-56-28
Siren	A. C. Merritt	Jamaica Bay Y. R. A.	10	3-15-00
Italia	Geo. Lee	Eastern	—	1-55-57
Tobasco II	J. S. Proctor	Eastern	—	2-41-59
Demon	F. B. Crowninshield	Eastern	—	2-27-31
Squaw	John Lawrence	Eastern	—	3-28-52
Elena	M. F. Plant	Eastern	—	15-40-45
Princess	Demarest Lloyd	Eastern	—	19-23-10
Wanderer VI	Flint Bros.	Bristol	—	2-39-45
Momo	W. E. Butler	Bristol	—	2-31-58
Little Rhody	C. F. Tillingghast	Bristol	—	2-26-25
Emblem	Latham	Bristol	—	3-09-39
Usona II	A. L. Lincoln	Hingham	—	2-15-00
Blue Grass	D. O'Hara	Manchester (Mass.)	—	2-11-00
Edjarko	S. E. Raymond	Gloucester	—	2-20-15
Osprey	C. R. Hansom	Gloucester	—	2-14-20
Weasel	E. A. Flye	Gloucester	—	2-13-03
Hen	Geo. Nichols	Seawanhaka-Cor	—	1-18-50
Margaret	Haight Bros.	Unqua Cor	14	1-10-20
Manitou	Chas. Molineaux	Unqua-Cor	14	1-20-12
Nutmeg	A. C. Jones	Squantum	—	0-53-25
Lethe	Hollis Burgess	Squantum	—	0-52-51
Eleanor	W. L. Jefferson	Squantum	—	0-56-30
Dartwell	I. M. Whitmore	Squantum	—	0-56-59
Martza II	C. H. Porter	Squantum	—	0-58-16
Dorsyl	S. L. Govin	Squantum	—	1-04-35
Scaler	E. W. Murphy	Squantum	—	0-56-55
Barbara	J. J. Blaney	Squantum	—	1-00-55
Edjacko II	—	Gloucester	—	1-26-31
Osprey	C. R. Hanson	Gloucester	—	1-34-07
Weasel	A. Flye	Gloucester	—	1-38-22
Tid II	A. G. Leonard	Gloucester	—	1-40-12
Miani	F. G. Hall	Gloucester	—	1-39-36
Dart	R. H. Gillespie	Stamford	—	1-34-00
Moranto	E. F. Whitney	Seawanhaka-Cor	—	1-31-02
Alice	G. Davis	Bensonhurst	12	1-51-16
La Cubana	J. H. Ives	Bensonhurst	12	1-59-02
Blue Bell	Z. Mayhew	Bensonhurst	11.5	2-08-43
Cyric	C. L. Atkinson	Bensonhurst	11.5	2-06-44
Mouse	R. Dingman	Bensonhurst	8	1-31-50
Flicker	A. E. Henderson	Seawanhaka-Cor	—	1-26-35
Omeme	F. Holt	Washington Park	—	4-35-30
Molly	O. Howes	Washington Park	—	4-26-02
Jacquinall	—	Lavin Hill	—	1-25-55
Istalena	G. M. Pynchon	New York Yacht Club	23⅞	2-58-33
Istalena	G. M. Pynchon	New York Yacht Club	23⅞	2-58-28
Corinthian	H. C. Smith	New York Yacht Club	18¼	2-52-06
Caprice	R. N. Ellis	New York Yacht Club	18¼	3-06-27
Vandalia	W. B. Duncan, Jr.	New York Yacht Club	18¼	3-16-54
Irolita	E. W. Clark	Eastern	33	3-41-50
Princess	—	Eastern	33	4-42-50
Tammany	—	Eastern	33	5-59-55
Avenger	H. L. Maxwell	Eastern	33	4-45-34
Dorello	—	Eastern	33	5-57-21
Humbug	Foster	Nahant Dory	—	2-02-32
Lewanna	L. G. Spence	Riverside	10	2-07-30
Cliphora	C. D. Mallory	Riverside	10	2-31-37
De De	—	Riverside	10	2-47-37
Drena	S. Shethar	Riverside	10	2-45-34
In It	—	Riverside	5	1-38-33
Istalena	G. M. Pynchon	Indian Harbor	20	3-06-18
Corinthian	H. C. Smith	Indian Harbor	15	3-01-10
Okoee	J. A. Mahlstedt	Indian Harbor	15	3-23-24
More Joy	P. V. Giffin	Indian Harbor	11	2-24-14
Helen II	E. Randolph	Indian Harbor	11	2-46-08
Sally IX	A. E. Black	Indian Harbor	11	2-26-33
Amada	B. R. Stoddard	Indian Harbor	11	2-31-29
Rascal III	S. C. Hopkins	Indian Harbor	11	2-35-02
Yukan	N. D. Weir	Indian Harbor	11	2-42-43
Turquoise	J. S. Morgan, Jr.	Indian Harbor	8	2-11-11
Little Dipper	Geo. A. Corry	Indian Harbor	8	2-16-07
Ace	—	Indian Harbor	5	1-27-29
Sarana	Gilbert Bros.	Indian Harbor	5	1-47-48
Arethusa	A. G. Hanan	Indian Harbor	11	2-45-17
Gray Jacket	F. C. Noble	Atlantic	10.5	1-45-24
Joy	Le Sauvage & Geer	Atlantic	10.5	1-51-40
Blue Bell	Z. Mayhew	Atlantic	9.6	1-56-43
M. & F. II	C. M. Camp	Atlantic	9.6	1-49-40
Mouse	R. Dingman	Atlantic	8	1-32-24
Elizabeth II	E. Cornell	Canarsie	10	2-36-30
Caddie	E. S. Carr	Canarsie	10	2-20-35
Curlew	E. Wilson	Jamaica Bay	14	2-30-52
Sinbad	Geo. Brown	Jamaica Bay	14	2-59-42
Nutmeg	A. C.	Columbia-Boston	—	1-37-45
Sintram	O. L. Brambach	Columbia-Boston	—	1-47-10

*Compiled expressly for NATIONAL WATERWAYS by C. F. Chapman, Asst. Editor *Motor Boating*

The National Rivers and Harbors Congress

of the United States of America

will hold its

Ninth National Convention

Washington, D. C.,

December 4th, 5th, 6th, 1912

Opening Address by
President William Howard Taft

Convention Hall
New Willard Hotel

THE rapidly expanding commerce of the country, the shortage of cars, already evident and certain to become acute, and the approaching completion of the Panama Canal, all demand that our waterways be speedily improved and put into condition to bear their full share of transportation burdens.

To assist in bringing about the adoption of a governmental policy which will insure this result we cordially invite your attendance at the Convention. Mayors of cities and officers of Commercial Organizations have authority to appoint delegates, and we earnestly request that you will use your influence toward having the commercial and manufacturing interests of your city and section strongly represented.

National Rivers and Harbors Congress

JOSEPH E. RANSDELL, President S. A. THOMPSON, Secretary

NATIONAL
WATERWAYS
A Magazine of
Transportation
Published by
the National Rivers & Harbors Congress Washington D.C.

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VOL. 1 No. 2

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*

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KIMBALL PIANOS

Gems

of the

Piano World

The painter's art lies upon the surface of the world; he reproduces nature as he finds it; but the musician's and piano maker's art lies beneath the surface. The rough material of Harmony, like the diamond, is in deep mines, earth encrusted, and does not exist as a thing of priceless beauty until refined and made luminous by earnest, painstaking toil.

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A FEW FACTS

CONCERNING THE NATIONAL RIVERS AND HARBORS CONGRESS

The National Rivers and Harbors Congress is a voluntary civic organization, organized in 1901 and reorganized in 1906, the purpose of which is to bring about the improvement and utilization of the waterways and harbors of the United States. In its membership are included Boards of Trade, Chambers of Commerce, Business Men's Clubs and other commercial organizations throughout the country; City Councils, Boards of Harbor Commissioners and similar municipal bodies; Waterway Associations formed to promote individual projects; and public-spirited individuals, firms and corporations who recognize the necessity for the increase of transportation facilities and the decrease of transportation costs which improved waterways would furnish.

The membership runs into the thousands and includes prominent people in all sections of the country. All officers are elected for terms of one year by the delegates in attendance upon the annual convention, the Secretary-Treasurer, who devotes his entire time to the work of the organization, being the only one who receives a salary.

WHAT IT ADVOCATES

The National Rivers and Harbors Congress advocates a policy which will secure the systematic, comprehensive and speedy improvement of all the waterways and harbors of the United States to such extent as shall be found commercially justifiable.

This policy may be briefly outlined as follows:

First, Regular annual appropriations for waterway improvements.

Second, Adequate appropriations, which should be at least $50,000,000 per year.

Third, The use of continuing contracts so that work once begun may be pushed steadily forward to completion.

Fourth, The provision of funds by an issue of bonds when current revenues are insufficient, just as has been done for the Panama Canal.

Fifth, The provision of adequately equipped terminals, either publicly owned or so controlled that they shall be open to all users on equal and reasonable terms.

Sixth, The enactment and enforcement of all legislation needed to secure constructive cooperation instead of destructive competition between railways and waterways.

WHAT IT HAS ACCOMPLISHED

The National Rivers and Harbors Congress has been actively at work for seven years. Among the results which have been accomplished may be named:

The passage of River and Harbor Bills every year instead of once in three years.

An increase of over $10,000,000 in average annual appropriations for waterways.

The placing of some projects under continuing contracts and the naming of definite times for the completion of others.

The authorization of a much-needed increase in the number of U. S. Engineers in charge of waterway improvements.

The exemption of vessels carrying coastwise commerce of the United States from the payment of tolls for passing through the Panama Canal.

The passage of legislation to protect waterways from unfair competition, and giving the Interstate Commerce Commission power to regulate the relations between railways and waterways.

No claim is made that the National Rivers and Harbors Congress is entitled to the entire credit for these results. The effective work done by local waterway associations and commercial organizations is fully recognized and the invaluable cooperation of the press of the country is cordially appreciated. But this Congress has insistently, consistently and persistently advocated these things, has conducted a nation-wide campaign in their behalf, and is entitled to a large share of the credit for their accomplishment.

AMONG OUR ENDORSERS

The value of important waterways and the commerce development of the country cannot be exaggerated, and the necessity that the Federal Government should adopt a definite and fixed policy that will provide for their speedy improvement must be evident to every one who considers the matter at all.

It gives me great pleasure to express my deep interest in all that the National Rivers and Harbors Congress is doing.

Woodrow Wilson

Perhaps the greatest influence toward the framing of a broad, comprehensive, progressive policy of river and harbor improvements is being exercised by the National Rivers and Harbors Congress. Its motto is "A Policy, Not a Project." Through its work the question of waterway improvements has been most prominently and favorably brought before the public, and men of the highest character and influence throughout the country are enlisting in its cause. It urges the appropriation of fifty millions of dollars per annum. Such a policy has my hearty approval.

Wm. H. Taft

A special word is due the National Rivers and Harbors Congress. It is the one organization that is advocating a waterway policy and not a waterway project, and is national in its scope, for it represents practically all the friends of waterway improvement in the United States. The question of river and harbor improvements and the benefit that each will bring to the producer and consumer has, through its work, been favorably and prominently brought to the attention of the country. Prominent commercial organizations and men of character and influence throughout practically every section of the country are enlisted in the cause it represents. Its work being strictly national, and in no sense local or sectional, merits and should receive the support of our citizens.

Theodore Roosevelt

SEATING THE 28th PRESIDENT

AN IMPOSING MILITARY AND CIVIC DISPLAY ATTENDS THE PROGRESS OF THE NEW EXECUTIVES TO THE WHITE HOUSE

AT the command of a free people, without the mediæval mummery, the tinsel and the trappings, the "fuss and furbelow," so inherently a part of the coronation of Old World sovereigns, Woodrow Wilson, the Scholar of Princeton, the teacher, the historian and the statesman, and Thomas Riley Marshall, the lawyer, the progressive American, who has forged his political armor after his own pattern, became the President and Vice-President, respectively, of the United States, on Tuesday, March 4, 1913, under auspices at once the most brilliant and the most elaborate, since the beginning of the Republic. And while one man stepped peacefully into the Presidency, another, William Howard Taft, beloved for his Americanism, esteemed for his devotion to the Law and the Constitution, sincerely admired for his optimism, good fellowship and wholesomeness of heart, stepped out of a mighty office, with much power, into the ranks of the plain people of the Nation.

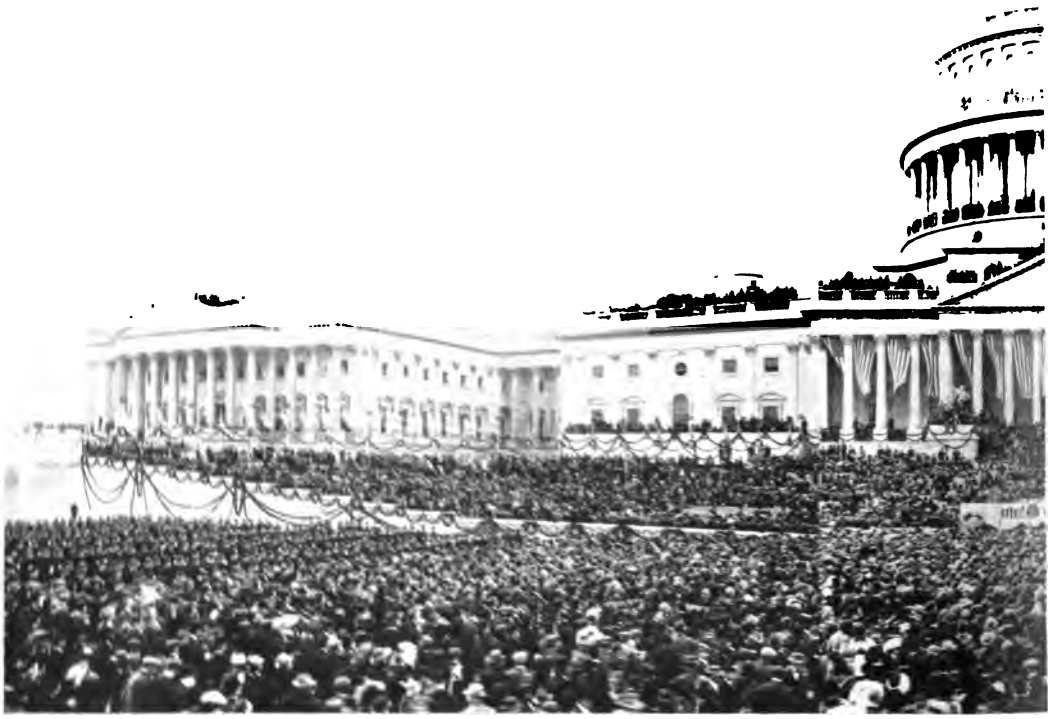
And this great change in the political history of the country was accomplished with such elaboration as becomes a free people, differing not at all in kind, but larger and upon a more magnificent scale, than that which every citizen sees on festal occasions at home, with no show of nobility, no display of aristocracy, except as it permeates the body politic of an enlightened democracy.

From the Peace Monument at the foot of Capitol Hill to the reviewing stand (a replica of Monticello), in front of the White House, Washington, the capital city of a hundred millions of free people, was a kaleidoscope of color on Inauguration Day and the procession, in honor of the induction into office of the President and Vice-President, with its military, its naval and its civic features largely accentuated, made a never-to-be-forgotten occasion in the history of the Presidency, notwithstanding the expressed wish of President Wilson that the occasion should be simple and devoid of unnecessary ostentation.

Nature smiled a welcome for the new era and a vast concourse of people wished for the new Executive strength and wisdom to meet the responsibilities of his high office. On the immediate pages following there is presented NATIONAL WATERWAYS'

Pictorial Supplement of the Inauguration and the Woman Suffrage Tableaus and Pageant

TENS OF THOUSANDS LOOK ON WHILE



THE CAPITAL A SEA OF LIGHT

THE ABOVE IS A VIEW OF PENNSYLVANIA AVENUE LOOKING FROM FOURTEENTH STREET TOWARD THE CAPITOL AFTER THE FALL OF DARKNESS
[illegible] PRESENTS THE [illegible] OF [illegible] BY [illegible] OF LIGHTS OF
EVERY HUE AND COLOR [illegible] NOTE IN THEIR RECEDANCE

OATH IS TAKEN BY WOODROW WILSON

REVIEWING THE PARADE

HERE IS SHOWN THE REVIEW PAVILION OF THE COURT OF HONOR. FROM THIS STAND THE PRESIDENT AND VICE-PRESIDENT WITH THEIR FAMILIES VIEWED THE FIVE-HOUR PARADE. PRESIDENT WILSON IN THE CENTER, VICE-PRESIDENT MARSHALL TO HIS LEFT, AND GEN. LEONARD WOOD TO HIS RIGHT.

© *Harris & Ewing*

"GOOD-BYE!" THE PSYCHOLOGICAL MOMENT OF EX-PRESIDENT TAFT'S LEAVETAKING OF PRESIDENT WILSON ON THE THRESHOLD OF THE WHITE HOUSE. © *Buck, 1913*

THE FARRAGUTS, DECATURS AND DEWEYS OF THE FUTURE, THE CADETS FROM THE UNITED STATES NAVAL ACADEMY AT ANNAPOLIS, WHO WERE ACCLAIMED FOR THE BRILLIANCY OF THEIR SHOWING IN THE PARADE. *Photo by Buck*

PRECISE IN STEP AND RHYTHM AND EXEMPLAR IN SOLDIERLY BEARING—THE WEST POINT CADETS, WHO OCCUPIED A FOREMOST POSITION IN THE INAUGURAL PARADE. *Photo by Buck*

AFTER THE INAUGURATION OATH; PRESIDENT WILSON AND EX-PRESIDENT TAFT RETURNING TO THE WHITE HOUSE FROM THE CAPITOL; OPPOSITE IN CARRIAGE, SENATOR BACON AND FORMER SENATOR CRANE. © *Buck, 1913*

"ANTIS" CHARGE CIRCUS TACTICS

By MRS. ARTHUR M. DODGE

President, the National Association Opposed to Woman Suffrage

"Our Keynote is Dignity"

DIGNITY was the keynote of the magnificent meeting of the National Association Opposed to Woman Suffrage, held at the Belasco Theatre in Washington on the eve of the inauguration festival. Dignity is and will be the keynote of all public demonstrations in which the opponents of the Woman Suffrage movement will figure. The Dignity of Womanhood is the cardinal principle for which we stand. And it is by the contrast we

fect, by the unswerving maintenance of that dignity, that we expect ultimately to convince the nation of the supremacy of our position.

I have been asked by many whether our organization would arrange an "Anti-Suffrage Hike" or an "Anti-Suffrage Pageant." Not while I have the honor to be the National President shall we lend ourselves to any such idea. We Anti-Suffragists recall Daniel Webster's dictum that "just governments do not derive their power from tumultuous assemblies." When we must resort to performances that suggest the tan-bark and the three-ring circus, with all its sideshows, we shall declare as lost the first principle of our movement—the Dignity of Womanhood and the all for which it stands.

But the really splendid audience that responded to our invitation at the Washington meeting was proof positive of the support and the endorsement we enjoy from the intelligent men and women of the country. Every walk of present-day life was represented, from the first statesman of the land to the humblest worker, and we had but to state the vital principles for which we stand, to receive an ovation that spoke volumes for the attitude of the public at large to Woman Suffrage.

As for the extraordinary "demonstrations" that are being put forward by the advocates of Woman Suffrage, they are bringing to that movement all the publicity which its adherents seek for it—and even more, perhaps, than is being sought. The wretched performances of the "militant Suffragists" of London have been endorsed by the antics of their American sisters within the very shadow of the Washington Monument. It remained for women, who promise to show a more excellent way in government, to use an inauguration of a President as a means of advertising political propaganda.

"Our Watchword, Home"

PROMINENT IN NATIONAL ASSOCIATION OPPOSED TO WOMAN SUFFRAGE

In the order shown—Mrs. A. J. George, Secretary of Massachusetts Association. Mrs. George ranks high as a public speaker. Mrs. Bayard Taylor Kiliani, Chairman of the New York State Organization; Miss Alice Hill Chittenden, President of the New York Association; Mrs. Arthur M. Dodge, President of the National Association; Mrs. R. G. Hazard, of Rhode Island; Mrs. John B. Heron, of Pittsburg, Penn.; Miss Lucy J. Price, of Cleveland, Ohio. Miss Price is considered by many as the most eloquent speaker of the cause. Miss Evelyn Sears, of Massachusetts. Miss Sears was the former Woman Tennis Champion of the World.

THE WOMAN SUFFRAGE PAGEANT

By NELLIE BLY

IT was great! It was stupendous! The Woman Suffrage Pageant, that wended its triumphant way through stately Pennsylvania Avenue, from the Capitol to the White House, and to Continental Hall. It triumphed even over the incompetence of the wretched police force "ordered" to protect it. It was surpassed in its effect as a political demonstration only by the vast multitude that cheered it on its way. That multitude! It will go down into history as one of the finest, most responsive and most unified in spirit that ever speeded a conquering army toward its goal.

Such color! Such life! Such unbounded enthusiasm—and a purpose so serious!

From every state, from every city, from every quarter of these United States the brave, determined and noble women came. And what a panorama they unfolded for the crowds that thronged "the Avenue," as Pennsylvania Avenue is termed by the people of Washington. From the remotest parts of the Universe they came. And their showing plainly told the world-wide extent of the great movement.

Fine, noble delegations. And more delegations. By states, by cities, by villages. Each vying with the other to advance the principle, the right, of Woman Suffrage! And the floats! Superbly mounted and decorated, and all in exquisite taste! Color in plenty, but in admirable harmony. And what an apotheosis of beauty was realized in the tableaux and dances in Greek costume on the steps of the Treasury!

Yes, the Woman Suffrage Pageant of March 3, 1913, must pass into history as one of the signal events of the Twentieth Century. That vast multitude will contribute to the final attainment of the ballot for women. And that great army that paraded from the Capitol to the White House, and beyond, will henceforth be the Grand Army of Woman Suffrage, whereof the "crack" battallion will be the "hikers." Yes, the "hikers" were there, headed by their valiant leader, "General" Rosalie Jones. "General" Jones has done a great work, and the National Suffrage Association appreciates it. Even the threatened war with Mexico cannot exclude us from the front pages of the press. Suffrage is our cause. It is the universal cause, the cause of womanhood. We have done more than the man who told the sun to stand still. We have made it rise in the West, and it is traveling East.

Photo by Buck

THE VAST CROWD THAT SURGED INTO PENNSYLVANIA AVENUE, UNCHECKED BY THE POLICE, FREQUENTLY BLOCKED THE PARADE. THIS WANT OF POLICE PROTECTION HAS BECOME THE SUBJECT OF A CONGRESSIONAL INVESTIGATION

MRS. RICHARD COKE BURLESON
GRAND MARSHAL

SCENES FROM THE PAGEANT

In the gorgeous Greek tableaux, depicted in the panorama at the top of the two pages, the youngest and fairest Woman Suffrage advocates posed and danced, headed by Mme. Hedwig Reicher, the actress and interpreter of Ibsen, who essayed Columbia. These beautiful scenes were enacted upon the magnificent terrace formed by the broad steps of the National Treasury. A trio of mounted "White Brigade," shown in the center picture, was lustily cheered by the multitude of spectators that lined the route of the pageant all the way from the Capitol to Continental Hall.

MISS INEZ MILHOLLAND

MISS FLORENCE NOYES

SCENES FROM THE PAGEANT

The float shown in the centre of the page sounds the keynote of the Woman Suffrage movement and the appearance of this motto was the signal for a mighty outburst of applause and cheering from the hosts of spectators, regardless of sex, color, or position. The cheering hundreds of thousands were drawn from every rank of national life. In the lower left corner, Miss Florence Noyes, the dancer, is shown surrounded by coryphees in one of the tableaux erected on the Treasury steps, to the music of military bands.

MISS FLORENCE LAWRENCE
HEAD HERALD

Opening of Lakes to Gulf Waterway

First Through Steamer from La Salle to New Orleans

(La Salle, 96 miles from Chicago on the Illinois River)

All-Water Freight Service from Chicago to New Orleans

Via the Drainage Canal, Illinois and Michigan Canal, and the Illinois and Mississippi Rivers

The First in History

The initial trip of the large Freight and Passenger Steamer E. S. Conway, of the Chicago and New Orleans Transportation Company's Lakes to Gulf Line, will be made

APRIL 13, 1913

Company aided materially by its Freight Traffic Committee of the Chicago Association of Commerce, in celebration of this important event.

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COLOR WORK BY MUNDER-THOMSEN PRESS, BALTIMORE

NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I APRIL, 1913 NUMBER 2

THE SIXTY "RIOS" OF THE AMAZON

By J. F. ELLISON

"EVERYBODY knows of the Amazon; many, perhaps, know of the Madeira; very few Brazilians, themselves, and few, even, of the rivermen know all of the fifty or sixty 'rios' tributary to one or the other of the main streams, and all, in turn, tributary to the Amazon." So observes Captain Ellison, the veteran Ohio River steamboat man, who, by virtue of his post as general manager of the greatest inland transportation system in the world, is virtually in control of Amazon navigation.

THE assertion that the Amazon and its affluents cover more miles of navigable rivers, and extend farther from the coast line than any other river system on the planet, may be proved by a look at any atlas. The other assertions made by the writer will not be so easy to verify and will have to be either accepted as correct, or condemned as false.

The first of these, and which will be the hardest for the average man to believe, is that the Amazon and its chief tributaries, lying as they do under the shadow of the equatorial line, are in a temperate climate; it is certainly never intemperate in coolness, and compares very favorably with the heat "jags" that the Ohio, Mississippi and Missouri River valleys go on, regularly from June to September, 100 to 105 degress of heat being frequent there. The city of Pará, at the navigable mouth of the Amazon and eighty miles from the equator, has never known a higher figure than 95 degrees, and in the ten months that the writer has been located there the range has been from 85 to 90 degrees. San Gabriel, on the Rio Negro, lies exactly on the line and is reported to be slightly cooler than Pará.

As all our ideas are those of comparison, it appears that we are justified in using for the tropics the word temperate, at least in describing the Amazon Valley climate.

Time, space, inability to spell some of the names and the very great doubt that if they were spelled correctly, they could be pronounced properly, is cause for mentioning only a few of the more important rivers forming the Valley of the Amazon.

Everybody knows of the Amazon; many, perhaps, know of the Madeira, for on that river, 1,750 miles from the coast, one of the wonder railroads of the world

has been built by Americans. A few people outside of Brazil know something of the Solimoes, the Purus, the Juruá, and the Negro; very few Brazilians, themselves, and few, even, of the rivermen, know all of the fifty or sixty other "Rios," tributary to one or the other of the main streams, and all, in turn, tributary to the Amazon.

Harris & Ewing

J. F. ELLISON

In considering the statements which follow, the fact should not be lost sight of that it is an American boatman, accustomed to American river boats and ways, that is making them.

The main control of the navigation of the Amazon and its affluents has rested for forty years and, until August of last year, in the hands of an English company, which means that English-built boats have, with but a very few exceptions, been the only kind of boats used; being willing always to "give credit where credit is due," testimony is cheerfully given that our English cousins build magnificent ships for deep sea service, splendid lake and bay steamers, but if, in all their history as a maritime people, they ever built a good, serviceable light-draft, river steamboat, personal observation, covering a fairly wide range of territory and a vastly wider field of reading, has never beheld such.

For the Amazon and lower reaches of the important tributaries the English boats do fairly well, but in the extreme Altos Rios, where in dry seasons the channels get to six feet or less, they are not "in it" and the American sternwheeler, the premier light-draft boat of the world, is now, for the first time in the history of North-Brazil navigation, to be used and will, undoubtedly, penetrate farther into the upper reaches of the rivers than any other steam craft has ever gone; that they will bring new rubber

By courtesy Pan-American Union

THE RECONSTRUCTION OF THE

IN SPEAKING OF BRAZIL WE ARE ALL LIKELY TO CONJURE UP PICTURES OF TROPICAL FORESTS
THE ABOVE WATERFRONT WHEN COMPLETED WOULD

districts into the market is a foregone conclusion. As for the boatmen, they are not like Kentucky whiskey, which is all good, but they compare well with their class in the United States.

The Subvention Edital, under which sixteen different lines of the Companhia Navegaçao do Amazonas operate, calls for an annual run of 363,550 miles, and this covers line runs only and not voyages into the Altos Rios. Right here some of our old Mississippi or Ohio River friends will smile and shake their heads skeptically. The answer is, if you don't believe, come down for a little trip of six or eight months, go over the lines, and then be prepared to apologize.

The company named owns and operates sixty-two steamers of the combined freight and passenger class, the total tonnage of the fleet by government measure being 39,000 tons, and, in addition, there are forty-five other steamers registered at Pará and Manaos under private ownership; these, in addition to a vast number of tugs, lighters, barges and launches make up the fleet of commercial steamers.

No argument is needed to show that there must be a considerable traffic to enable the number of steamboats named above to pay their owners a satisfactory return on the money invested. Up stream, the tonnage consists largely of merchandise and foodstuffs. Down stream, rubber, Brazil nuts and cocoa form the bulk of traffic, with rubber leading in quantity and value. It is conservatively estimated that for every ton of rubber that comes down the river, twenty-five tons of merchandise must go back up to supply the people who are in the forests gathering borracha. So long as the Pará rubber remains near its present price of $1.25 per pound, there is no question of supplies coming in, and the statement is made with some regret that ninety-five per cent. of all merchandise is imported. These imports come from Germany, England, the United States, Portugal, Spain and France. As these nations are named in the order of their position in the foreign trade of Brazil, it will be seen that we rank third, and if proper effort be put forth and ships and banking facilities be

CITY'S WATERFRONT AT PARA

AND VIRGIN WILDERNESS, INSTEAD OF FLOURISHING CITIES AND A PROSPEROUS PEOPLE DO CREDIT TO ALMOST ANY OF OUR SEAPORTS

provided, the United States should soon rank first of all countries in the volume of goods exported to this part of Brazil.

If the plans of one man of master mind, and that particular man an American, can be worked out, the future traffic and industrial possibilities for the Amazon Valley are marvelous. With a soil as fertile as the Mississippi Valley, a climate quite as good as the lower portion of that valley, there remain but two important questions to be solved. Immigration first, and the contribution must be of a class who are used to work in a warm, damp climate.

Plans are now perfected to give to Amazonas cheaper internal transportation than has ever prevailed. A powerful steamboat company, that has long controlled rates, has been purchased. New and larger steamers, better adapted to handle freight, have been ordered in Holland and are now being delivered at Pará, coming across the ocean under their own steam. From the States have come seventeen light-draft boats that will carry far into the interior and make possible a sweeping reduction of transportation cost.

The Madeira-Mamoré Railroad has been built around the Falls of the Rio Madeira, giving to Bolivia the first easy, direct and safe route that country has ever had to and from the markets of the world.

The port works of Pará have been completed and every device for the quick, safe and economical transfer of freight from docks and deep sea ships to river steamers has been installed. As a matter of fact, the docks at Pará have few equals and no superior along the entire seaboard of North America. All this has been done, not alone to exploit the present resources of the valley, but to help its present and future inhabitants to increase its natural wealth.

The prediction is made that the future traffic of the Amazon Valley will justify all energy and money that Percival Farquhar has so freely given to it, and the date is not far distant when there will be carried on the world's greatest river a commerce that will tax to the utmost a vastly larger commercial fleet than the present one, for the time when this part of Brazil will have railroads to compete with and throttle water transportation is too far in the future for the eye of mortal man to see, or the mind of men of the present generation to conceive. If a personal word be allowed, let me say in concluding, that after fighting so many years for river improvements, it is rather a pleasant sensation to be connected with a river transportation proposition that does not require government appropriations.

PARA'S STATE-ENDOWED THEATRE, SET IN A BEAUTIFUL PARK—ONE OF THE REFINEMENTS OF THE EQUATORIAL CITY

THE EMPIRE DRAINED BY THE OHIO

By ALFRED BETTINGER

*"SHIPMENTS from Pittsburgh to Cincinnati by river cannot be reshipped to an interior point by rail, except at local rates which * * * * consume the advantage of the cheap water rate; while the same shipment, if made by rail to Cincinnati, will be forwarded by another road upon a proportionate division between the two roads of a through rate" Thus does Mr. Bettinger summarize the evil besetting the commerical activity of the "land of abundance" watered by the Ohio for one thousand miles.*

AT Pittsburgh, the Allegheny River, rising in northwestern New York and flowing south, and the Monongahela, having its source in the northern part of West Virginia and flowing north, meet and form the Ohio River. The uniting streams pass through territory abounding in natural resources. The Monongahela has for many years been slack-watered for about 125 miles, and its banks are fairly teeming with industrial life, the commerce on this river exceeding annually 10,000,000 tons. The Allegheny has not been improved, except for a very short distance, further improvement being suspended because a number of ancient bridges at its mouth obstruct navigation by their insufficient height, and the indiscriminate, irregular placing of their piers. Though railroads flank this river on either side, the natural resources of its valley still await their real development.

Benjamin

The Ohio, which flows for 1000 miles in a southwesterly direction to the Mississippi at Cairo, forms the boundary line between Ohio, Indiana and Illinois on the north and West Virginia and Kentucky on the south. The valley which it drains is greater in extent than the German Empire and is the abiding place of more than fifteen millions of people. It contains four-fifths of the known coal supply of the country, and it is said that no coal found north of the Ohio River is suitable for the manufacture of iron and steel.

The center of population has since 1840 traveled on a line parallel with it and has never been many miles from its shores. The center of manufacturing industries has, also, for the past fifty years been in this valley.

The Ohio River was the great highway for the early settlers of the Middle West, and, until within the past thirty years, in connection with its own tributaries and with the Mississippi, which it joins at Cairo, it was the greatest commercial highway in the country.

In 1842, for example, the entire steamboat tonnage employed in the United States was 219,994 tons, over half of which plied on our western rivers, the eastern coast ports being second and the Great Lakes third. At the same time the steamboat tonnage employed in the Ohio and Mississippi Valleys exceeded the entire tonnage of the British Empire.

Notwithstanding that railroads now skirt both banks, from source to mouth, the Ohio still floats an annual commerce of 10,000,000 tons, and 90 per cent. of the commerce that goes down the Mississippi to New Orleans comes out of the Ohio. This results from the large shipments of coal from Pennsylvania and West Virginia, which are made in barges towed by powerful sternwheel steamboats, of which the *Sprague* is the largest. The banner trip of this steamer, made from Louisville to New Orleans, was 57,500 tons. It is not unusual for steamers to bring into the Cincinnati market upon a freshet 250,000 tons of coal and finished steel products within a week. To move this quantity by rail would require 5,896 cars of 45 tons each, made up into 146 trains of 30 cars each, drawn by as many locomotives. No railroad, how-

ever well equipped, could perform this service inside of sixty days without excluding its regular traffic, to say nothing of its inability to assemble such a quantity of traffic at either of its termini. This illustrates the illimitable capacity of river transportation.

For many years our Government has expended money in more or less desultory efforts to improve the navigation of the Ohio River. But, upon a thorough examination and survey made in 1907 by a Board of United States Engineers, of which Col. William L. Sibert, now one of the Panama Canal Commissioners in charge of the construction of the Gatun dam and locks, was the head, Congress adopted a plan of canalization comprising 54 locks and movable dams, to provide a minimum depth of nine feet. The wickets of these dams may, within the space of two or three hours, be laid down upon the bottom of the river when the river is naturally of a navigable stage, so that boats may pass over them, instead of through the locks. When the river drops below a navigable stage the wickets may be raised again. The locks are 110 feet wide (the same as those at the Panama Canal) and 600 feet long.

This type of dam has been adopted because the Ohio River, for a large but uncertain portion of the year, naturally far exceeds a depth of nine feet, during which time passage through locks would be impossible by reason of their being flooded, or would cause unnecessary detention.

On the other hand, there are periods, equally uncertain in point of time and duration, when the river is far below nine feet in depth, and it is this fact that has rendered river transportation unreliable and the improvement described to be necessary. The estimated cost of the improvement is $63,000,000, and about one-third of the work has been done.

AN EVER-BUSY SCENE DOES THE OHIO RIVER LANDING STAGE AT CINCINNATI PRESENT. THE KENTUCKY SHORE IN BACKGROUND

In recommending the improvement, the Board of Engineers observes:

"The Board realizes that it is suggesting a plan of river improvement on a scale not hitherto attempted in this country, but it believes that there will probably be in the near future a popular demand for the improvement of several streams on such a

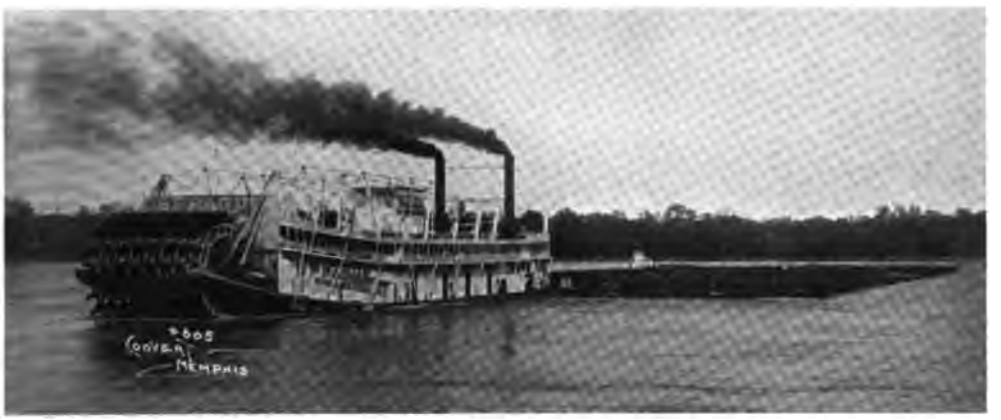
scale. On account of the large commercial development of its shores and its connection with the lower Mississippi, now maintained in a navigable condition, the Ohio River is, in the opinion of the Board, the one river of all others most likely to justify such work."

The attention of students of transportation is centered upon this improvement, to watch its effect upon river commerce.

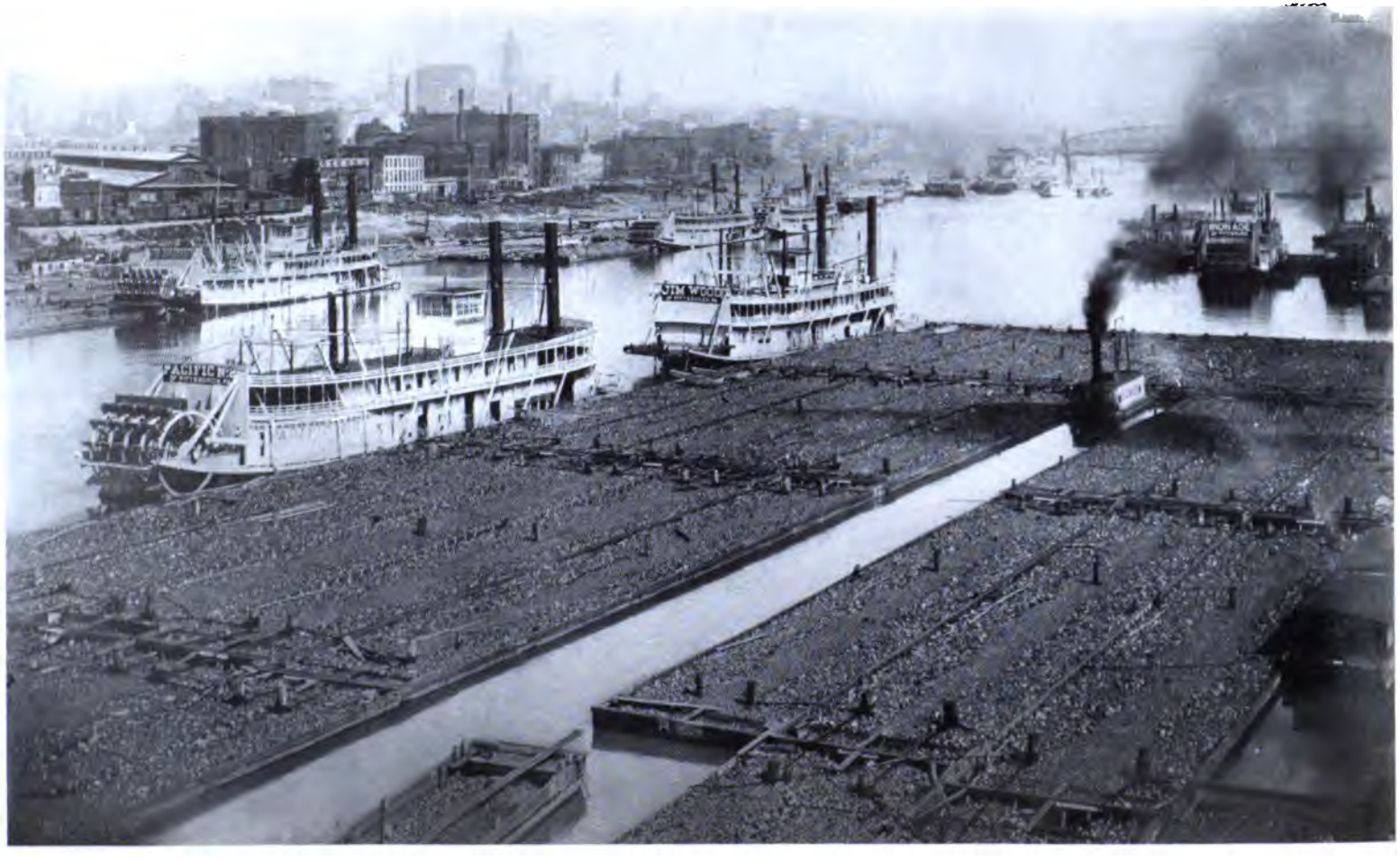
There are those who maintain that the decline in river traffic is permanent; that the railroads are in every way more efficient and have, therefore, permanently supplanted transportation by river. These views are promulgated chiefly by persons interested in competing railroad lines, and are not shared by broad-minded railroad men generally. On the contrary, these, and others conversant with the subject, maintain that the demonstrated inability of the railroads to carry the increasing commerce of the country compels resort to our waterways and that the best interests of the people demand their improvement to make them dependable all the year round.

There are two chief causes which, in conjunction with periodical suspension of navigation by low water, have contributed to the decadence of river commerce. The first is that railroads have reduced their freight rates between competitive points far below the actual cost of carriage and then, when the river carrier had been driven out, have raised them again, the railroad in the meantime making up its loss by raising its rates between interior points. This method of competition is now prohibited by an amendment to the Interstate Commerce Law, which provides that when a railroad reduces its rate in competition with a water line, the same cannot again be restored unless, after hearing by the Interstate Commerce Commission, it is shown that the proposed increase is justified by changed conditions other than the elimination of water transportation.

The second cause is the refusal of railroads to honor, or issue, through bills of lading upon shipments made in part by water; or to agree upon a through rate as they do between themselves; or to make physical connection with water routes so as to facilitate and cheapen transfer from water to rail and vice versa. For instance, goods shipped from Pittsburgh to Cincinnati by river cannot be reshipped to an interior point by rail except at local rates which, with transfer charges, will consume the advantage gained by the cheap water rate; while the same shipment, if made by rail to Cincinnati, will be forwarded by another road upon a proportionate division between the two roads of a through rate. This serious hindrance will be removed when the new Panama Canal Law goes into effect, which amends Section 6 of the Interstate Commerce Act by a provision authorizing the Interstate Commerce Commission to establish through routes and maximum joint rates between and over water and rail lines, and to establish physical connection between the rail carrier and the dock or wharf of the water carrier, by directing either or



THE "SPRAGUE," WHICH UPON ONE OCCASION MOVED THE WORLD'S RECORD CARGO—51,570 TONS OF MERCHANDISE AND FUEL



PITTSBURGH, "THE STEEL CITY," ENJOYS THE ADVANTAGE OF A RIVER FRONTAGE WHEREFROM COMES HER INDUSTRIAL SUPREMACY

both, according to the circumstances of the case, to lay connecting tracks. These provisions, together with uninterrupted navigation, will make the Ohio River and its confluents an integral part of the transportation system of the country.

If deep channels had been provided while the railroads were being extended and improved river commerce would not only have been maintained, but would itself have contributed to a still greater commercial development than we have experienced. The intermittent, unreliable and uncertain navigation is the real and, properly considered, the only cause of the decline in water transportation. Other contributing causes herein mentioned are but the result of uncertain seasons of navigation, which, with dependable channels, would either have disappeared or would never have arisen at all. Indeed, but for the distinct advantages of cheapness, quick delivery and unlimited capacity of water transportation over that by rail, not a vestige of river traffic would be left. The survival of packet lines on all our Western rivers, and the development of coal transportation lines unique in cheapness and the volume of their deliveries in spite of long and uncertain seasons of suspension of navigation, are positive proof of the inherent advantages of river transportation. No railroad line similarly handicapped could survive the competition of its rivals.

Nor is it correct to attribute any portion of the decline to crudeness of the steamboat or to lack of thrift of steamboat men or managers, as is so often done. The steamboat in its type, motive power, tackle, equipment and accommodations has been constantly improved to take full advantage of the intermittently navigable river channels.

Alternating conditions of low and high water, swift currents, floating ice, fogs, faulty disposition of bridge piers, low bridges and other obstructions have kept alive a spirit of improvement which has produced steamboats thoroughly adapted to present conditions, not only for safe navigation, but for the handling of freight aboard ship as well as for receiving and discharging. The balanced rudder, a clever device for the more effective control of the boat, and the steam capstan, now in use all over the world, were first introduced on the Ohio River. The railroads have by no means surpassed the steamboat in the manner of handling merchandise freight. They have not even kept pace with the steamboat. In fact, the greater portion of this class of freight, if not all, is handled by the shipper or receiver himself, each in his own way and with the means available to him.

Two citations from reputable trade journals might be quoted in support of this statement. The *Engineering News* in its issue of January 5, 1911, stated:

"All admit that our present methods of freight handling are crude; they are no better than they were fifty years ago, while not nearly so cheap."

The *Electric World* some time since called attention to the same fact in similar language.

True, there must be suitable terminal facilities in the form of wharves, docks and transferring machinery, and these must be provided by the States or municipalities and be accessible to all railroads and river lines on equal terms.

Public water terminals have long been in use in both the inland and ocean ports of Germany, and are now fast becoming an institution in American transportation.

There is every reason to believe that as the Ohio River improvement approaches completion municipalities along its shores will bestir themselves to provide adequate and efficient public terminals.

But above all things it should be understood that Governmental action, whether Federal, State or municipal, to foster transportation by water, is not taken in hostility to the railroad, but in the interest of the commercial development of the country. The water line must be a competitor of the rail line in no different sense than one rail line is a competitor of another between the same points. There must be as much cooperation between rail and water lines as there is among the railroads themselves. Then the one method of transportation will be a complement of the other, and our commerce will have the benefit of the best there is in both.

THE "SHIPS OF THE DESERT" SCENT THE WATERS OF A DISTANT OASIS

By courtesy of Liebler & Co.

A SEA IN THE SAHARA

By HARRY CHAPIN PLUMMER

"UNDOUBTEDLY the influence of the French in North Africa would be immeasurably strengthened by the opening up of an almost limitless area of the Sahara, hitherto regarded as waste land." One of the few American newspaper writers who have sought to impartially present the political and economic causes for Italy's seizure of Tripolitania is Mr Plummer, who here reveals the commendable rivalry that exists between France and Italy for the reclamation of the desert on the Tunisian-Tripolitan frontier.

Harris & Ewing

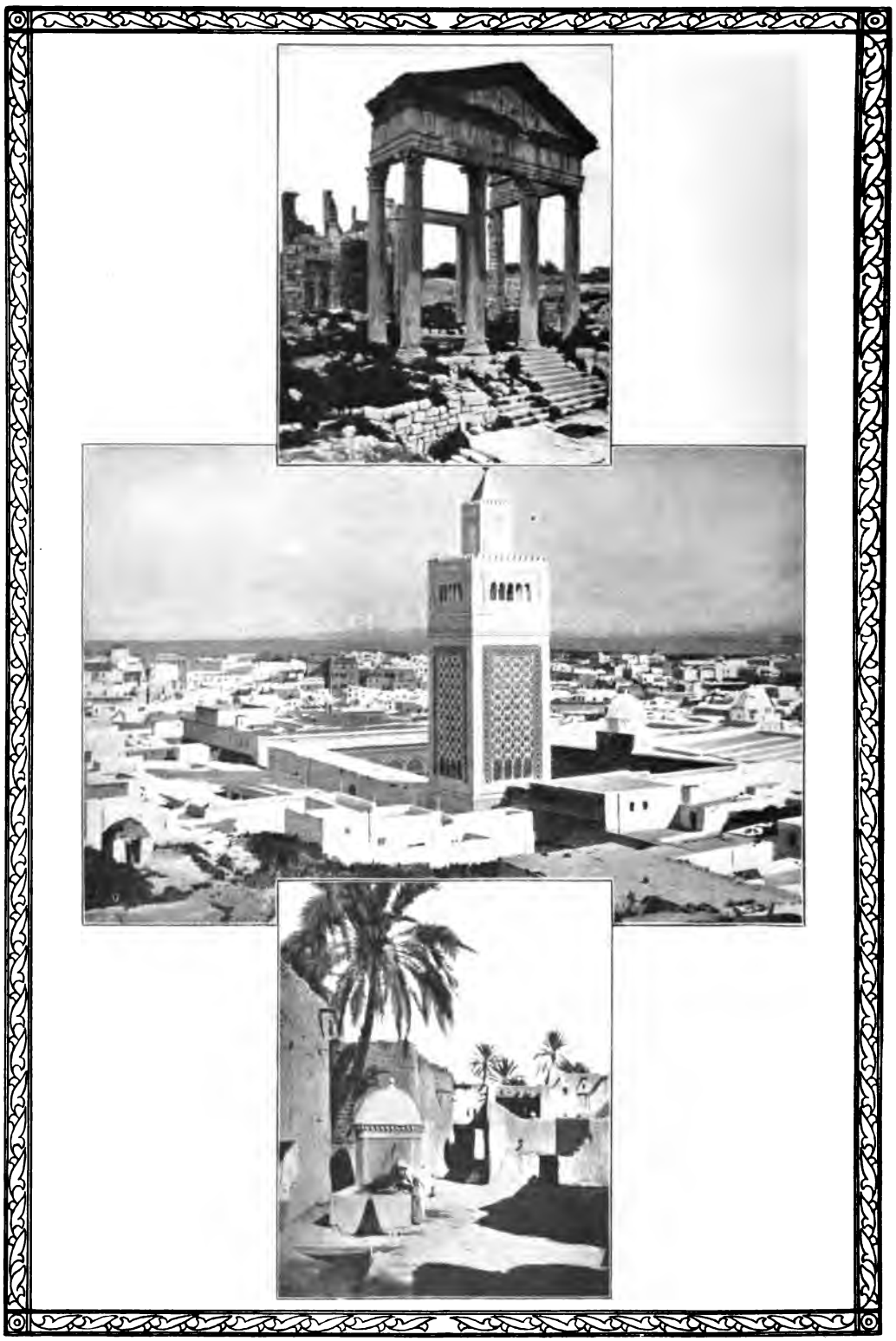
BY an engineering project of most magnificent daring, the Sahara Desert promises to be penetrated to its very heart by the floods of the sea, so that where now the camel, that traditional "ship of the desert," maintains his awkward, but faithful, march across the parched and arid wastes, real craft would sail, threading their way among verdant islands. Like a very Arabian Nights' dream must this prediction seem. Yet it has the authority of the most learned of modern scientists to give it the impress of fact. Although the proposed Inland Sahara Sea would afford a most valuable commercial waterway from the shores of the Mediterranean to the sand dunes of the interior, the primary purpose of the great undertaking is to render cultivable, by the inducement of rainfall, a vast desert area surrounding the promised water expanse.

It is the opinion of the most conservative men of science that the "flooding of the Sahara" would have the effect of mitigating the blighting, scorching "sirocco," or hot wind, that, periodically sweeping from the desert across the Mediterranean, spreads ruin and devastation among the vineyards and olive groves of Sicily. Almost directly across the sea from Sicily lies the squalid little seaport and caravan town of Gabés, in Tunisia, where the waters of the sea would make their first entrance to the Dark Continent.

European interest in and speculation anent the Elie Roudaire project of three decades ago, for the construction of a great artificial inland sea to flood the wastes of the Sahara Desert, or of that portion of the desert lying within the confines of Tunisia and to the southward of the Tunisian frontier of the southeastern wing of Algeria, has lately been revived. The object of so colossal an engineering work would be to induce, by the creation of a body of water of an average depth of seventy-eight feet, an appreciable precipitation over the northern portion of the desert. The original Roudaire scheme was for a water extent of 3100 square miles. Viscount de Lesseps, the builder of the Suez Canal, regarded the plan as a feasible one, and estimated that it would cost $30,000,000.

The latest plans for the Sahara sea, now under consideration by the French government, contemplate the flooding of a desert area of millions of square miles and extending yet farther southward than the zone of the earlier project. Out of this immense sea the higher and more mountainous sand dunes would rise as barren islands of sand. By the inducement of moisture, however, it is the theory of the advocates of the plan that certain forms of vegetation could be made to thrive, when given a dependable source of moisture and protected from the ravages of the sandstorms that, in the absence of the arresting influence of water areas, oversweep the Sahara, attaining a range and velocity of tremendous proportions.

For two hundred and fifty miles of the distance inland from the Gulf of Gabés, on the Tunisian coast, the proposed man-made desert sea would be accommodated



1. FACADE OF RUINED TEMPLE ERECTED TO JUPITER AT DOUGGA
2. TUNIS, THE METROPOLIS AND CAPITAL OF THE FRENCH POSSESSION, EQUALS INDIANAPOLIS IN POPULATION (170,000)
3. "TOWN PUMP" AT BISKRA, AN IMPORTANT RAILWAY CENTER IN THE EASTERNMOST ALGERIAN PROVINCE OF CONSTANTINE.

ARAB MARKET SCENE AT GABÉS
THE GULF PORT WHERE THE WATERS OF THE MEDITERRANEAN WOULD ENTER THE DESERT COUNTRY

westerly frontier of Tripolitania, or of that vast, little-explored division of Tripolitania known as Fezzan.

By a *coup d'etat*, which has been regarded a very masterstroke of French diplomacy and which was effected some time prior to the outbreak of the Italo-Turkish war, a new delimitation of the boundary line between Tunisia and the old Ottoman vilayet of Tripoli advanced the easterly border of the French possession to embrace a strip of the territory of Fezzan three hundred kilometers (186 miles) from the sea. Of this the center of population is the important frontier-town of Ghadàmes. Indeed a strategic point of value to the French occupation is this gateway to Fezzan and the great caravan routes leading to Murzuk, a hotbed of Moslem fanaticism, to Ghat and to the wastes of the Sahara reaching yet farther into the interior of the continent.

An oasis is Ghadàmes in the stretch of desert-land classified, among the several differing types, as the Erg, or region of great sand hills. Extending westward from Ghadàmes, the Erg is traversed by the Wadi Ighergher, the bed of a stream which finds its seaward continuity in the succession of waterways of like character and the several "chotts" which would form the Inland Sea.

So, in fixing upon Ghadàmes as the final outpost of their territory, the French have effectively flanked, upon the only side from which foreign interference might be anticipated, the zone of the projected Inland Sea. Ghadàmes will become still more important as a military stronghold when the Tunisian railway system connecting with the lines crossing the easternmost Algerian province of Constantine is extended southeastward to that point. For Ghadàmes is destined to be one terminus of that system, whereof yet another will be Gabés, the gulf port which would mark the Mediterranean entrance to the Inland Sea.

It is a fact now generally known that the economic necessity for Italy's seizure, upon behalf of the ancient Sicilian industry, of extensive sulphur deposits in the region of Tripolitania and Cyrenaica bordering upon the Gulf of the Great Sidra —

called in Arabic "Giun-el-Kebrit" (the Gulf of Sulphur)—was a determining factor in the rupture of peaceful relations between the two countries. The Turkish authorities, by traditional procrastination and elusion, had effectually prevented the Italians from gaining a foothold in the exploitation of the sulphur and phosphate.

In April of 1911, half a year preceding the commencement of hostilities, an Italian mineralogical expedition, captained by Count Michele Sforza, was sent out by the Bank of Rome, under the protection of the royal government, to definitely ascertain the extent and richness of the sulphur deposits of Tripolitania, which had attracted the attention of Crispi almost two decades previously. The six members of the expedition found themselves hampered from the moment of their entry into the Turkish possession. And their ultimate arrest and detention as prisoners of war were a noteworthy event in the annals of the war.

In the light of what has since transpired it becomes clear that the Italian government was impelled to take its stand, in respect to the sulphur resources of Tripolitania, not so much by Ottoman inertia as by the unwonted activity displayed by France in the advancement of her Tunisian frontiers to include the territory about Ghadàmes, which was known to be rich in sulphur. Indeed, no sooner had the latter nation acquired from the Turks the zone abounding in mineral deposits than the noted French geologist, Pervincaire, was sent post haste to the scene from Paris, in company with the director of the mineral service of Tunisia.

The two technicians pursued with the utmost secrecy a plan of study and research of the mining possibilities of the region about Ghadàmes. It is interesting to note that when they had completed their work at that point, they proceeded to the vicinity of Gabés. There they investigated and confirmed the existence of a stratum of sulphur extending outward from the shore to the nearby island of Gerba, or Gerja, where the mineral was encountered in exceeding richness of quality and in abundant quantity, at a depth of but fifty-eight feet from the surface.

Never before has the problem of reclamation of the Sahara wastes so actively engaged the attention of science as in the present day of conquest of the Mediterranean seaboard of North Africa. The

WHERE THE SCORCHING SANDS OF THE DESERT GIVE WAY TO THE COOL, LIMPID WATERS OF THE OASIS OF TOUGGOURT—"THE

resources of twentieth century ingenuity are being exhausted in the study of the problem—in Southern Algeria and Tunisia by the French, and in Tripolitania, or the "Libia Italiana," as they would term it, by the Italians.

One of the first of Italy's scientists, Professor Paolo Vinassa de Regny, of the Royal University of Parma, has made the possibility of restoring the splendid irrigation maintained under the Roman domination of ancient Cyrene the subject of a searching investigation. His conclusions, as published in the *Rivista d'Italia*, detail the hydraulic resources of Fezzan and take into special consideration the desert-land of the Erg. His remarks, quoted as follows, indicate the exact nature of the formidable obstacles which, like Italy in Tripolitania, France is seeking to overcome in Tunisia, and against which the Inland Sea would be expected to effectively operate:

"The type of desert most familiar to the popular mind, but, in fact, not the most common, is the Edeien, or sandy desert, of which the Erg, on the Tunisian frontier of Tripolitania, is an example. It adjoins Ghadàmes on the west as it adjoins the Hammada (rocky desert) on the east and on the north. In the Edeien are the impalpable sands into which the wayfarer sinks, while the drift fills his eyes, his ears, his mouth, his nostrils. It finds its way into the food and the water —wherever quartzose sands may penetrate—and, borne by the wind, it injures the eyes and draws the blood from the exposed skin. But in the very midst of the sands of the Edeien are the verdant spots called oases."

The scholar lays stress upon the productive capacity of the desert sands along the Tripolitan coast, which present a remarkable likeness to the Tunisian Erg:

WATERS OF THE SKY ARE DEAD, BUT THOSE OF THE SUN (THE UNDERGROUND STREAMS) LIVETH," IS AN ANCIENT ARAB PROVERB

"'Desolate African sands' is a time-honored phrase. * * * A great part of the Tripolitan coast, as we have seen, is truly all sand. Our opponents are right; in the noun, not in the adjective. Sand, in fact, is all the soil of the oases and of the 'desert' that surrounds the oases—sand and a little clay. But sand is full of fertilizing elements, possesses many advantageous properties, and in its mineralogical make-up is complete in all those chemical elements which are indispensable to the development of plant life. It would be difficult to imagine an African soil more fertile than this sand."

"FIRST IN PEACE" -WASHINGTON LANDING AT NEW YORK FOR HIS INAUGURATION

INAUGURATING OUR PRESIDENTS

By EDGAR C. SNYDER

"MORE women will be in evidence at the Wilson inauguration than at any since the girls of Trenton, whence Governor Wilson comes to Washington, in a flower-laden procession greeted the first President on his way to New York." It is an imposing array of the elect of the Republic that Mr. Snyder marshals in his review of twenty-seven inaugural ceremonies—from "The Father of His Country" to the "Scholar of Princeton," who is to be seated in office this month.

WHEN the founders of this Republic provided for the highest office within the gift of the people, they ordained in the Constitution in Article II, Section 1, Paragraph 7: "Before he shall enter on the execution of his office, he shall take the following oath or affirmation: 'I do solemnly swear (or affirm) that I will faithfully execute the office of President of the United States, and will, to the best of my ability, preserve, protect and defend the Constitution of the United States.' "

Harris & Ewing

That was what was at first termed the "inauguration." It was designed by the fathers to be as simple as it was solemn, as solemn as it was simple. But, although divested in no wise of the impressiveness of sacred consecration to mighty powers and exalted responsibilities, the initiative of the first inauguration was made an occasion of unrestrained popular jubilation. The christening of the Government under the Constitution, celebrating anew the birth of the Republic, when blossoms of new life made brilliant the bosom of the springtide, filled Americans of the first generation with an overbrimming joy.

All the way from near Virginia's heart to the site of the great metropolis of the New World there was unfeigned enthusiasm for the world's greatest champion of liberty. There was no moment's cessation to these demonstrations anywhere along the route until the taking of the oath prescribed by the Constitution.

General Washington, having borrowed $3,000 wherewith properly to equip himself for the extraordinary emergency in which he was required to exhibit himself, kissed his mother goodbye, and on April 16, 1789, set out on his way to New York, for his inauguration. A great crowd of Virginia men, women and children bade him Godspeed, with the parting optimistic injunction from the mayor of Alexandria, "go and make a grateful people happy."

On the northern bank of the Potomac all the citizens of Georgetown greeted him. Many of them accompanied him all the way to Baltimore, and from there many Marylanders went with him far along the way toward Wilmington, Delaware. The next pause was at Chester, Pennsylvania, for an elaborate breakfast. Then at Philadelphia a multitude welcomed him with every sign of delight. There Angelica Peale, a daughter of one of the famous painters of the Revolution, crowned him with a wreath of laurel, the climax of that day's feting being a banquet at the City Tavern. The historic "City Troop" of Philadelphia was his cavalry escort to Trenton, New Jersey, where they found long lines of young girls on either side of the highway, which they had strewn with flowers. That night he spent at Trenton with the famous Presbyterian minister, Rev. Dr. John Witherspoon.

Crossing the waters between the Jersey shore and New York, he was borne on a barge manned by the masters of thirteen vessels. Then with him were a joint Congressional reception committee and, as the chroniclers of the time have it, "a committee of effervescent spirited gentlemen of New York." The weather was fine.

WOODROW WILSON, WHO IS TO BE INAUGURATED THE TWENTY-EIGHTH PRESIDENT OF THE UNITED STATES

© HARRIS & EWING

THOMAS R. MARSHALL
ELECTED VICE-PRESIDENT OF THE UNITED STATES

General Washington wore a suit of solid buff, coat, waistcoat and breeches, all buff; with a light sword at his side. Just two weeks after he had left his mother in the little Virginia town, at 9 o'clock on the morning of April 30, began the march to the place of inauguration at the City Hall. Cannon boomed and church bells rang as twelve military organizations wheeled into line behind the President-elect, seated in a coach drawn by four horses.

The oath of the Constitution was administered by Chancellor Livingston, and as its words were uttered and the concluding sentence, "So help me, God," fell from the lips of the "Cincinnatus of the West," the Chancellor raised his hand and cried, "God save George Washington, President of the United States."

The multitude took up the cry with joyous acclamations and showered their congratulations upon the first President of the United States, as he stood smiling among them attired in an elegant brown velvet suit, a fine new sword at his side and silver buckles shining at his knees and on his shoes.

Such were some of the features of the first inauguration. The second inauguration of Washington was by appointment of the Congress, to be permanently on that date, March 4, 1793, at Independence Hall, in Philadelphia. On this occasion the President wore a black velvet suit, ornamented with diamond knee buckles, black silk stockings, elaborately powdered hair; light sword in a green scabbard. A central figure was the first Secretary of State, then called the Secretary of Foreign Affairs, auburn-haired Thomas Jefferson, in a blue coat and red breeches.

The inauguration of the second President, John Adams, was the last in Philadelphia, and took place in the Hall of the House of Representatives. There was much impressive ceremony, but far less ostentation than on former occasions.

Thomas Jefferson's inauguration, traditionally accounted the simplest of all, was the first in Washington. There are conflicting stories concerning whether Jefferson rode horseback to the scene and hitched his own horse, but there is no doubt that it was a very simple and gravely business-like affair. The retiring President was not there, sickness in the family being the excuse offered. Jefferson's second inauguration, even more simple than the first, was in the Senate chamber, and the oath, as in his first inauguration, was administered by Chief Justice John Marshall.

The fourth President and the third Virginian to head the young nation, James Madison, dressed in a suit of American-made woolen, was inaugurated with somewhat more display by the people than was his predecessor. There was marching, and artillery thundered for a time. Then in the evening was held the first inaugural ball. Madison's second inauguration was a repetition of the first.

When James Monroe, the fifth President, was inaugurated in 1817, there was a larger military display than at any since Washington's first in New York, and at night there was a public reception and a ball at the Davis Hotel, now the Metropolitan, on Pennsylvania Avenue.

Another simple and severely formal inauguration was that of John Quincy Adams, which took place at the Capitol in the Hall of the House of Representatives, now Statuary Hall, in which Mr. Adams was fatally stricken with illness while he was a member of the House.

The inauguration of Andrew Jackson, another military hero, was long memorable for the great multitude of people, and the numerous troops of soldiers, and bands of Revolutionary veterans. Jackson was the first President to be inaugurated at the east portico of the Capitol. In the meanwhile, former President Adams was somewhere else, taking a horseback ride.

Martin Van Buren's inauguration had for notable features a ride from the White House to the Capitol with Jackson in a phaeton made out of wood from the old Revolutionary frigate *Constitution*, and two inaugural balls.

A third soldier-President in William Henry Harrison showed another martial-featured inauguration, with dancing and refreshments in the evening at three inaugural balls. He was the first President to die in office, and his successor quietly took the oath April 6.

James K. Polk, inaugurated March 4, 1845, had a popular demonstration of welcome to office, but with the disadvantage of such extremely disagreeable

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THE COMING "FIRST LADY OF THE LAND," MRS. WOODROW WILSON, AND HER THREE DAUGHTERS
Standing, from left to right, Miss Jessie Wilson, Miss Margaret Wilson, Mrs. Wilson; seated, Miss Eleanor Wilson

MRS THOMAS R MARSHALL
WIFE OF THE VICE-PRESIDENT-ELECT

weather that it caused the first agitation known for a change of inauguration date.

Zachary Taylor, the fourth war hero, naturally had very much of a military inauguration, with many present who had served with him in Mexico. This inauguration had three balls, one in a temporary structure in Judiciary Square, one at Jackson's Hall and another in "Carnie's saloon;" all attended by the President and Vice-President.

Millard Fillmore, upon President Taylor's death, took the oath of office in the Hall of the House, before both houses.

Gen. Franklin Pierce was inaugurated in bad weather, but nevertheless at the east portico. Vice-President William R. King was in Cuba on account of failing health, and took the oath of office at a consulate in Matanzas. There was no inaugural ball in Washington that year.

The inauguration of James Buchanan was a brilliant occasion in propitious weather. There were several balls and receptions, and besides Buchanan and Pierce in attendance was George W. P. Custis, grandson of Mrs. George Washington.

The inauguration of Abraham Lincoln was portentous of tragic years to come upon the country. There was a large and imposing military demonstration, but it looked more like the preparation for battle than a peaceful pageant, for sharpshooters were posted on the roofs of houses along Pennsylvania Avenue for the protection of the President. Gen. Winfield Scott was in command. The sense of approaching strife was everywhere apparent, and it was sought to be relieved by Mr. Lincoln in the noble sentiment concluding his address when he said:

"The mystic chords of memory, stretching from every battlefield and patriot grave to every heart and hearthstone all over this broad land, will yet swell the chorus of the Union, when again touched, as surely they will be, by the better angels of our nature."

Upon Mr. Lincoln's death Andrew Johnson took the oath of office at Kirkwood's hotel on Pennsylvania Avenue, now known as the Raleigh hotel.

The inauguration of Ulysses S. Grant, the Union's greatest soldier, falling upon March 4, 1869, was in extremely gloomy weather, but saw the greatest military parade that had yet marched in Washington on an Inauguration Day.

Grant's second inauguration was in a raging storm, and the celebration of it was mainly confined to a big inaugural ball in a temporary building in Judiciary Square.

March 4, 1877, fell on Sunday, so that President Rutherford B. Hayes, after having taken the oath on Saturday night, March 3, was inaugurated on Monday following. There was an imposing military exhibition, torchlight processions at night, but no inaugural ball.

James A. Garfield's inauguration encountered a severely wintry day of sleet and snow. An inaugural ball was held in the National Museum building of the Smithsonian Institution.

Vice-President Chester A. Arthur, when President Garfield died, took the oath at his Lexington Avenue home, in New York City, at two o'clock on the morning of September 20, 1881.

The inauguration in 1885 of Grover Cleveland, the first Democratic President since Buchanan, attracted an enormous crowd of visitors to Washington, the largest the city had ever seen, with the

biggest militia contribution ever sent from the States. Among the marshals of the march was the Confederate veteran cavalry general, Fitzhugh Lee. At night was held the first inaugural ball using the Pension Office, and it was estimated it was attended by 8,000 people.

Mid lowering clouds and the constant patter of the rainfall, Benjamin Harrison, the twenty-fifth President of the United States, was inducted into the loftiest office within the gift of the people, March 4, 1889. And what a sorry-looking inauguration crowd it was! Never before had there been such preparations made for a gala occasion. But the storm which broke over the Capital on the day preceding seemed to take a fiendish delight in spending its force on the multitude that was in waiting to view the pageant as it swept majestically along historic Pennsylvania Avenue.

President Cleveland's second inauguration was much like the first, in all essential features, with a huge civic and military parade and an inaugural ball in the Pension Office building, but under trying weather conditions, which led to a renewal of the agitation for a change of date for the ceremony.

When William McKinley was inducted into office in 1897, after an election by a tremendous majority, to which many thousands of his former political opponents contributed, the occasion was marked by a great popular demonstration in his honor. His second election, with another general national endorsement, was followed by an inauguration in which the military feature was unusually interesting on account of the participation of soldiers who had served in the war with Spain in Cuba and the Philippines. The all-embracing patriotism of President McKinley brought the country's long-estranged parts into closer bonds of respect and mutual affection, while his untimely death caused nation-wide grief, for no President had been more generally beloved.

Vice-President Theodore Roosevelt took the oath of office at Buffalo, where he had been summoned from the interior of New York.

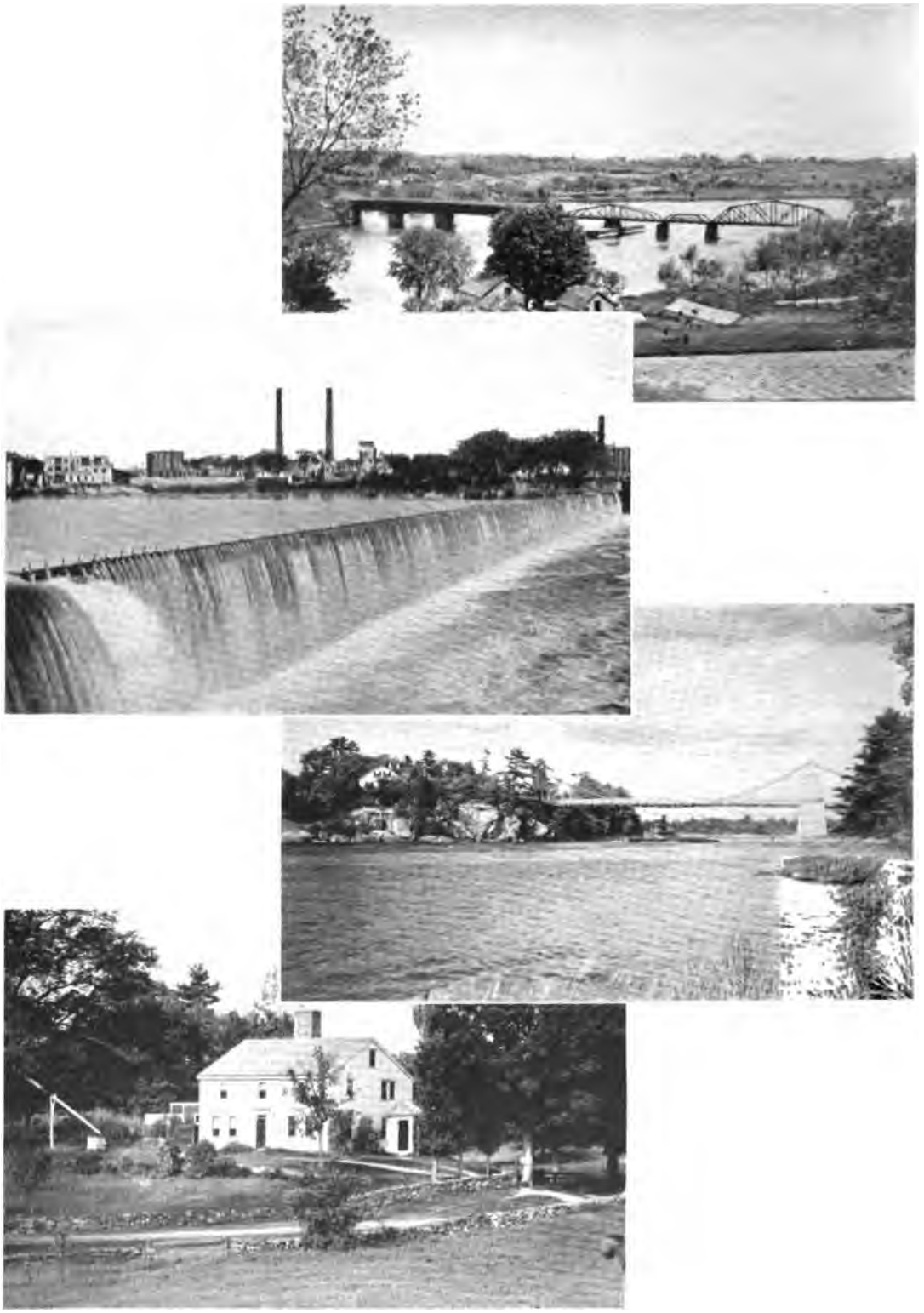
Elected to succeed himself in 1904, President Roosevelt's inauguration was quite in keeping with the character of the man. He had been one of the warriors on San Juan Hill, and troopers and cowboys who had served with him in his regiment of Rough Riders were in the parade.

President Taft's inauguration was one of the most popular of such events, marked by a fine military and civic display, including native Filipino soldiers and headed by a splendid Filipino band. The night closed the event with a great ball in the Pension Office and a marvellous display of fireworks and street illumination.

Now comes the inauguration of Woodrow Wilson, of New Jersey, the twenty-eighth and the eighth Virginia-born President of the United States. It will signalize the return to power, after sixteen years, of the Democratic party, following an election in which the native Southerner received more electoral votes from the northern than from the southern States.

President-elect Wilson having frankly signified that he wished the inauguration to be as simple as possible, the local managers have sought to comply with his wish. Conformably to his desire, the inaugural ball feature will be omitted. There will be the usual marching of organizations, civic and military, and fireworks. President Wilson, after the ceremonies, the oath, the address at the east portico and the review of the parade, will go at once to the White House, with his family, in whom the whole social mind of the Nation is unusually interested because in the Executive Mansion will dwell the worthy wife of a forceful man and ripe scholar, and three grown daughters, each possessed of exceptional charms of character and intellect.

Indeed the women of the country have evinced an unprecedented interest in the accession of the Wilsons. Women will, in organized marching ranks, represent the advocates of more liberal laws for their sex, having planned for the greatest and most impressive demonstration of the kind ever seen in America. In fact more women will be in evidence at the Wilson inauguration than at any since the girls at Trenton, whence Governor Wilson comes to Washington, in a flower-laden procession greeted the first President on his way to New York.



1 ROCKS BRIDGE AND THE MERRIMAC, HAVERHILL 2 LAWRENCE DAM, LAWRENCE 3 CHAIN BRIDGE, NEWBURYPORT
4 WHITTIER BIRTHPLACE, HAVERHILL

THE RIVER OF SPINDLES

By LESLIE K. MORSE

"WHAT an oversight there has been in the past in not developing this magnificent stream—a stream as beautiful as the Hudson—upon the banks of which so many thriving industries are located. The Merrimac turns more spindles than any other river in the world." The historic valley that pierces New England's "hive of industry" is described by Mr. Morse, whose position as the Mayor of Haverhill, the "slipper city," eminently qualifies him to discuss the crying need—a deep channel to the sea.

CLOSELY identified with the glorious history of Massachusetts are the deeds and achievements of the communities peopling the Merrimac Valley, but the most brilliant chapter must chronicle the modern industrial development of the numerous cities watered by that famous stream. From its source in the White Mountains, the lovely Merrimac courses through the verdant hills of the Granite State, to pass such stately cities as Concord, the capital of New Hampshire, and Manchester and Nashua. Flowing thence across the Massachusetts boundary, the Merrimac reaches Lowell, the birthplace of Whittier and the "Queen City of the Valley," physically fit to bear the burden of commerce which that teeming center of industry, whereof Whittier so eloquently sang, has built up for posterity. But for an ensuing distance of twelve miles, the river is a negligible factor as a waterway, and at Haverhill, where it first becomes navigable, craft of no more than two hundred tons burden can be accommodated, with but four and one-half feet of water available at low tide.

That Haverhill, the greatest slipper-manufacturing center in the world and destined soon to lead in the production of shoes and gloves, and Lawrence and Lowell, of woolen and cotton-mill fame, and a host of adjacent industrial cities, may be provided cheap and easy access to the untracked highways of the sea, representative citizens of the several communities have banded in the Merrimac Valley Waterways Association, a voluntary organization, endorsed by the city councils, boards of trade and civic bodies of the valley, from Lowell to Newburyport.

A waterway board appointed by Governor Foss of Massachusetts to compile data on the river, with a view to recommending its development, has already found that in order to make the great New England cities grow, her wonderful waterway, alongside of which the Indians trod, must be made navigable. A Federal Government engineer is expected shortly to make a report, following hearings and study, on the advisability of deepening the river from the mouth to Lowell, a distance of about 35 miles.

I may say that the Merrimac Valley Waterways Association evolved itself from the profound impression made upon me and upon several of my associates by the exchange of views and organization of activity witnessed at the National Rivers and Harbors Congress of a year ago. Knowing what we have in New England, I was very much surprised, and wondered why some one had not before looked out for old New England, the center of manufacturing industries of the world.

It has been estimated that this undertaking which we of the Merrimac Valley so much desire to see accomplished would cost $8,000,000, from Newburyport Harbor to Lowell. If the Federal Government should decide to issue bonds for this improvement, it would cost only $320,000 per annum, which amount doubtless can be saved on coal alone. Then we would be in touch with the whole world, as well

in receiving as in delivering our products. We now have the largest shoe factories and woolen mills in the world.

Of the total value of manufactures produced by the State of Massachusetts in 1911, amounting to $1,405,749,310, the industries of the Merrimac Valley contributed $214,355,241, or about fourteen per cent.

Only thirty miles from the ocean to Lowell, with only four and one-half feet at the present time at the wharf, at low tide, in Haverhill, fifteen miles from the ocean. What we want, and need, is a twenty-foot channel. We then can have

agriculture than any other county in New England, according to her size. If we had water rates, we could find a daily market in New York and Boston.

New England, and especially Massachusetts, has received but a small share of the total appropriations made by the Government for the improvement of waterways. For example Massachusetts, with a wealth and population twice as great as those of Texas, received in 1912, $745,000, while Texas received $3,542,000, or five times as much. In the last appropriation of 1912, Massachusetts received $431,000, and the State made an appro-

A MILE OF MILLS ALONG THE MERRIMAC'S BANKS AT LOWELL
COAL AND COTTON SHOULD REACH THESE BY WATER

our coal, lumber, cement, lime, cotton, and wool, shipped by the coast-wise boats to our wharves, where, to-day, we are dependent upon only one railroad. A man in my city handles English grain, and it costs him more for freight from Boston to Haverhill than it costs from Liverpool to Boston.

Let me try to prove why we think we are justified in calling upon the United States for the completion of this waterway. The population of Essex County is 535,499, and by including Manchester, Nashua and Concord, we add 117,575 more, besides twenty-five or thirty towns close to our border line. There are 7,939 manufacturing establishments in Massachusetts. There are 1,616 in the Merrimac Valley, about 22 per cent. of the whole State. Essex County produces more in

priation of $9,000,000 for the development of the Port of Boston, while Texas this year received from the Government $1,680,000.

There will be a bill drafted in the near future, asking Congress to take action upon this improvement, which will relieve the congestion and stagnation of progress on one of the most worthy streams of the Atlantic Coast. If the Federal Government can give twelve million dollars to one city, and a promise of twenty-five millions more, within a limited number of years, it does seem as though New England should commence to have hers.

Being in the real estate business, I have had opportunities to sell large tracts of land along the Merrimac to important industries, if we could show them that their raw materials could come by the

coast-wise boats. Haverhill has nine miles of frontage on the north side of the Merrimac; two miles is taken up by its factories and retail establishments, leaving seven miles suitable and available for any and all kinds of industries, with four miles on the south side of the river. The working people of the city of Haverhill own more equity in their homes than do those of any other city in this country.

In Haverhill there are 325 manufacturing establishments; Lawrence has 129, mostly large mills, and Lowell 234, the last named city being a mill municipality which is now attracting many diversified industries. Add to all of these the industries of Manchester, Nashua and Concord, and it is proven that no river has so many factories on its banks.

If New England is to maintain her supremacy as an industrial center, which she is able to-day to hold by reason of her unlimited supply of labor, capital and intellect, the avenues for reaching the crude or raw materials in addition to the railroad must find a way to the manufacturing community, and the development of the canals and rivers is the key to the situation.

The first improvement upon the Merrimac was at Newburyport Harbor in 1828. The next came in 1870, forty-two years later. From 1870 to 1874, and to January, 1896, there were appropriations amounting to $254,466.72, and in March, 1899, one calling for a seven-foot channel at mean low water to Haverhill, at a cost of $171,442.70. This was completed in 1907. So, at the present time, at low-water mark, we have 1.7 feet at the mouth of the river, and 4.6 at the wharves at Haverhill.

We come now to one of the greatest problems of the day, the shipping facilities which we have. First we will take coal. It costs fifty-five cents per ton to lighter coal from Newburyport to the Haverhill wharves, and to that twenty cents must be added for breaking and handling, making in all seventy-five cents per ton.

Haverhill used ninety per cent. of her water-rate coal in 1911, amounting to 70,705 tons, which would be a difference to the poor of $56,564. Seven miles farther up the river is the city of Lawrence, tied to her one railroad, the rates of which are much higher than the water rates. She might have saved on her consumption $113,128. Lowell, six miles farther upstream, with her prevailing rate of consumption might have saved $169,692. The total of the saving in these three cities in 1911 would have been $339,384, which is more than interest on $8,000,000 of bonds. One firm in our city could save $50 a day through the year if it might have the coast-wise boats land at its dock.

In 1903 there was a boat line in operation between Boston and Haverhill, and when it was withdrawn, more freight was left in the shed at Boston than the steamer could have carried upon one trip. Excursion steamers formerly plied up and down the river, conveying people to the beaches at the mouth, but the river has filled up with mud in places and these lines have been abandoned.

Let us see what the manufacturing products of the Valley can show: In 1911 Newburyport manufactured $7,202,724; Amesbury, $5,187,087; Merrimac, $919,020; Haverhill, the largest slipper city in the world, and destined to be the largest shoe and glove manufacturing center, $35,650,830; Lawrence, the next largest shipping point in New England to Boston, $69,574,701; Andover, $3,687,663; Methuen, $3,580,630; Lowell, $56,612,154; Billerica, $2,762,603; North Andover, $2,205,992; Chelmsford, $3,008,084; Clinton, $7,781,713; Georgetown, $369,805; Marblehead, $1,371,603; Peabody, $14,193,731; Rowley, $400,701; a total of $214,388,941. The amount produced in the entire State was $1,465,749,310.

By eliminating metropolitan Boston, this would give the Merrimac Valley practically one-sixth of the whole amount produced in the State. The assessed valuation of Essex County through which this river flows, with the upper part of Middlesex, also a part of the Valley, in 1911, was $383,708,540.

Nature has given us one of the most beautiful streams that flows into the Atlantic and has left nothing undone to make the Merrimac Valley as beautiful as the Hudson. But what I have sought to show is what an oversight there has been in the past, in not developing this magnificent stream, upon the banks of which so many thriving industries are located. The Merrimac turns more spindles than any other river in the world.

THE TRUE "SUNSET LAND"

I kept in mind a certain wonderful sunset which I witnessed when steamboating was new to me. A broad expanse of the river was turned to blood; in the middle distance the red hue broadened into gold, through which a solitary log came floating, black and conspicuous; in one place a long slanting mark lay sparkling upon the water; in another the surface was broken by broiling, tumbling rocks that were as many tinted as an opal; where the ruddy flush was faintest, was a smooth spot that was covered with graceful circles and radiating lines, ever so delicately traced; the shore on our left was densely wooded, and the sombre shadow that fell from this forest was broken in one place by a long ruffled trail that shone like silver; and high above the forest wall a clean-stemmed dead tree waved a single leafy bough, that glowed like a flame in the unobstructed splendor that was flowing from the sun. There were graceful curves, reflected images, woody heights, soft distances; and over the whole scene, far and near, the dissolving lights drifted steadily, enriching it every passing moment with new marvels of coloring.—MARK TWAIN.

THE UPPER MISSISSIPPI RIVER

By THOMAS M. WILKINSON

*"UPON an economic basis, the Upper Mississippi River is an indispensable requisite, as a complementary system of transportation. * * * * It is a most valuable asset, if used commercially to an extent commensurate with its capacity." As president of the Upper Mississippi Valley Association, and a director of the National Rivers and Harbors Congress, Mr. Wilkinson has headed the campaign for inland waterways in the Central West and in the working out of the vitally related problem of terminals.*

NEXT to the Revolution and Civil War, the Louisiana Purchase is the greatest fact in American history. Through the Louisiana Purchase the United States came into possession of the most fertile, resourceful, and prolific valley on the earth, and obtained control of the Mississippi River, which flows from its source in the far north southward through the longitudinal center of the valley, to its mouth in the Gulf of Mexico, a distance of nearly twenty-six hundred miles.

One of the greatest rivers in the world is the Mississippi, and Napoleon wisely prophesied that the nation which controlled the Mississippi River would be the greatest power on earth.

The Upper Mississippi Valley is an empire of unlimited resources, to which the trend of immigration has been directed for more than a century, growing in numbers each year. Still there is room for more; even six times its present population could live in luxury and comfort on its fertile lands. The sixteen million people now dwelling within the five States bordering upon the Upper Mississippi River, Minnesota, Wisconsin, Illinois, Iowa and Missouri, could be increased to one hundred million, without crowding the population per square mile, now averaging 51, to the density of many of the countries of Europe.

At the Falls of St. Anthony is built the metropolitan city of Minneapolis and just below, its twin city, St. Paul, the capital of the State of Minnesota, "the land of sky-tinted waters," among whose innumerable crystal lakes is found the source of the Mississippi River, "The Father of Running Waters." Minnesota is one of the richest States of our Union. It annually produces more iron than any other equal area in the whole world.

The twin cities, Minneapolis and St. Paul, with a population of six hundred thousand, are at the head of what is known as the Upper Mississippi River naviagtion, although the river is navigable for light craft for about two hundred miles above these cities, with its source still four hundred miles to the northward.

The daily output of the flour mills of Minneapolis is large enough to fill the bread baskets of one-fourth of our entire population. St. Paul is the railroad center and gateway through which pass every day thousands flocking to the great northwest country.

The fertility of the soil is wonderful. Besides all of the other productions of the nearly one hundred and fourteen million acres of improved farms in the five States just mentioned, the production of cereals alone on fifty-seven million of the one hundred and fourteen million acres, amounted in 1909 to nearly one billion dollars, or nearly one-fifth of the total production of cereals in the whole United States for that year. The manufactured products in these five States in 1909 amounted to three and three-quarter billion dollars, or more than one-sixth of the total manufactured products of the whole country, and of the total amount of manufactured products of the five States one-

fifth was produced in the cities and towns situated on the Upper Mississippi River between Minneapolis and St. Louis, inclusive.

The enormous production of the soil, the products of the mine and the factory, and the commercial activities of the people, aggregate a tonnage seeking transportation which taxes the present transportation systems to the limit of their carrying capacity. As these States grow older and their population increases production will be increased along every line. The commerce of the country is growing rapidly, increasing 100 per cent. every ten years. The question of transportation is a serious one. It is a matter in which everybody is interested. It affects everything bought and sold.

Upon an economic basis the Upper Mississippi River is an indispensable requisite as a complementary system of transportation. It belongs to the people and is one of their most valuable assets, if used commercially to an extent commensurate with its capacity. The people must provide facilities for its full utilization. Present methods are archaic and uninviting to shippers. An entirely new system must be inaugurated, or else the buisness will keep on going, as it does now, by the steel rails paralleling the river on both sides for its entire length. There is plenty of tonnage in sight for an immense traffic.

To harness the flow of the mighty Mississippi and to overcome the navigation difficulties of a notoriously shallow stretch of the river, the "Cooper dam," a project approaching in magnitude the Panama Canal, is now in course of construction at the foot of the Des Moines rapids in the Mississippi, between Hamilton, Illinois, and Keokuk, Iowa. The undertaking contemplates the creation of a permanent deep pool of slack water for sixty-five miles up stream, by which a nation-built canal, that has cost more than $40,000 a year to operate and maintain, will be completely swallowed up. The new dam, which will have a lock with a lift of forty feet and of the same width as the great locks at Panama, will attain to almost a mile in length. A power-house, about one-

THE MISSISSIPPI AT MINNEAPOLIS, SHOWING MILLING DISTRICT AND ST. ANTHONY'S FALLS © DETROIT PUB. CO.

third of a mile long, and a huge dry-dock will be among the chief appurtenances of the new dam, which takes the form of a great mass of concrete anchored deep in the solid limestone bed of the river. The completion of this work and the opening of the new lock to navigation early in the year 1913, will mark an epoch in the history of the Upper Mississippi Valley.

In its economic significance, the new water-power development must equal in magnitude and importance its grandeur as an example of engineering construction. Offering for perpetual use two hundred thousand horse power at a price below that charged at Niagara and at still less a price than that produced by the cheapest coal in the world, it creates, in the heart of the great Mississippi Valley, a new manufacturing and industrial center capable of supporting a million people in the peaceful walks of industry.

The cities and towns located on the Upper Mississippi River possess unbounded opportunities for the development of manufacturing industries. Their location on a main waterway connecting with the sea is a permanent advantage presenting most desirable economic conditions for assembling raw materials for manufacture and the distribution of manufactured products to the world markets.

The big Cooper dam promises to become an enduring monument to the engineering achievement, integrity and skill of its distinguished designer and chief engineer, Hugh L. Cooper, a native son of the Upper Mississippi Valley, to whose personal efforts and genius is due the success of this mammoth undertaking. The entire work is under close supervision of the Chief of Engineers of the War Department. The benefits to navigation will be very great, and the savings to the American nation will represent many millions of dollars.

The Panama Canal, when completed, will provide for every port on the Mississippi River an open door to the trade of South America and the Orient, which, in competition with Europe, can be secured only through the utilization of water carriage by manufacturing and commercial industries, as is done in Germany and in other continental states, where transportation costs have been reduced to the minimum by this means.

THE MISSISSIPPI RIVER BOULEVARD NEAR ST. PAUL

The commercial use of the Mississippi River has declined, owing to various causes. Among these have been the difficulty of navigating it, lack of port terminal facilities and modern transportation equipment, but a chief deterrent has been the attitude of the railroads towards it. However, an awakening of public sentiment has come about. The people are beginning to realize its value and the necessity for its use. Through the influence of the National Rivers and Harbors Congress, and auxiliary waterway associations, the National Government has adopted a liberal policy whereby our inland waterways are being more efficiently improved. The river promises soon to invite the construction of modern steel-built passenger and freight boats and barges.

During early days and up to the coming of the railroads the Upper Mississippi offered to pioneer settlers the only means of communication with the outside world, and the only route of transportation. Its commerce and influence built populous and prosperous towns and cities along its banks, which attracted growing railroad systems and induced them to build their lines to the river. In time they paralleled

THE COOPER DAM, TO PROVIDE THE WORLD'S GREATEST WATER-POWER, BEING BUILT ON THE MISSISSIPPI AT KEOKUK, IOWA

the river with their rails and extended their lines everywhere, even across the continent. The railroads furnished quick and easy means of communication and transportation, and have been the most potential human agency in the wonderful development of this new country.

The growth and physical development of the whole railroad system has been marvelous. Notwithstanding its perfection, it seems to have reached the limit of its carrying capacity, and a point where it is found to be a physical impossibility to provide facilities fast enough to handle the increasing commerce following the active development of the country and its rapidly growing population.

In the meantime the railroads have, through unrestrained methods and competition, diverted its commerce and absorbed the traffic of the river, until they have secured a monopoly of transportation in the valley, as, in fact, throughout the country.

The only commodities not driven off the river while they lasted, were logs and lumber. The primeval forests of pine in Minnesota and Wisconsin, which have been denuded under the woodman's axe during the last half century, made many millionaires in the Upper Mississippi Valley, largely because of the cheap cost of transporting the logs and lumber to the mills and markets on the river. The cost of shipping these commodities by the river was infinitesimal when compared to rail rates; therefore it meant a large profit to the owners when the products were placed on the market.

New industries have taken the place of the saw mills and the monthly pay rolls are larger, with better employment of labor than before.

It is a grand old river. It flows through the heart of the Nation, the richest valley on the earth, a valley settled by the best blood of all nations, through whose commingling and the blending of the best qualities of all, has developed a new type of people, the American race, and upon this rests the future of the American Republic.

De Tocqueville said: "In all the earth there is no spot given by Providence to the children of men so beauteous, so fair and so fertile, as the valley of the great Mississippi River, from north to south."

The Upper Mississippi invites the traveller seeking pleasure and repose. From the Falls of Saint Anthony, southward, is enjoyed one of the most fascinating scenic trips in all the world of river travel. There is no place where nature has been so lavish in its creation of beautiful hills, valleys, islands, and shore lines, as on the Upper Mississippi. They form an ever-changing panorama of beauty, filling the fortunate beholder with rapture and amazement.

There is a charm in its picturesque views scarcely to be found elsewhere in the world. Its possibilities, artistically, politically, and commercially seem boundless and inexhaustible.

The river, in its nature, is a creature of moods. No two places in its course are similar. It changes with every turn of its channel, with every season of the year, with every hour of the day, and almost with every cloud that passes.

The mighty Mississippi! What it has been for centuries past, it will be for centuries to come. It will keep on its slow and silent way to the sea, always the great dynamic, dramatic, realistic force it is to-day.

THE ECONOMY OF THE PARCEL POST

By DAVID J. LEWIS, *M. C.*

*"THE whole subject is now 'up to' the Postmaster-General * * * * as the institution to which Congress has given the power to construct a satisfactory transportation system for producers and consumers. * * * But, oh! what an opportunity for constructive work, to be done in the broadest conception of public progress." The Representative in Congress from the Sixth Maryland District guided the shaping of the new service, from the present experimental stage of which an adequate system eventually must be evolved.*

IF you want to know how it seems to be a Parcel Post package, ask the baby son of Mr. and Mrs. Jesse Beagle, of Glen Este, Ohio. Plump, laughing, pink-and-white little Louis, who weighs ten and three-quarter pounds, just a fraction within the weight limit for the new service, was the first human mite to become a "package," and to be received, insured, carried by Uncle Sam and duly delivered to the addressee. Mr. and Mrs. Beagle consigned their "By Bye" to his grandmother, Mrs. Louis Beagle, who dwells a few miles up the road from them, and on the Batavia, Ohio, Rural Delivery Route No. 5.

Harris & Ewing

Little Louis hugely enjoyed the trip in the mail buggy with Rural Carrier Vernon O. Lytle and signified his enjoyment by kicking his fat legs and waving his pudgy fists and laughing and cooing. But if he was just a wee bit cross after his "arrival at destination," perhaps it was because his baby dignity was outraged by the fact that only fifteen cents in postage sufficed to cover his novel transportation and that the "insurance" form appraised his value at fifty dollars!

Of the 4,000,000 packages that were sent out from fifty of the largest cities of the United States in the week following the inauguration of the Parcel Post service by Postmaster General Hitchcock at the very dawn of the year 1913, perhaps the most extraordinary was one containing the ashes of Frederick Naumann, who died at Edwardsville, Illinois, and whose remains were shipped to St. Louis, for cremation. The ashes were returned to his family by Parcel Post.

Now that the practical joker has had his fling at the Parcel Post—for the new service was of just the sort to appeal to the "Fool Killer"—the wonderfully practical advantages of the system are daily being demonstrated.

You ask me what practical economy the housewife, under the present Parcel Post rates, can realize by ordering direct from the producer. Several kinds of answers must be offered. First, the housewife living in a village or town from which a rural route starts can even now make practical use of the Parcel Post. Suppose she is buying for a family of five and needs two dozen eggs, two pounds of butter, two pounds of sausage and a dressed chicken. These would weigh about eleven pounds. For fifteen cents, on a rural route, she can have them carried from the farm to her kitchen.

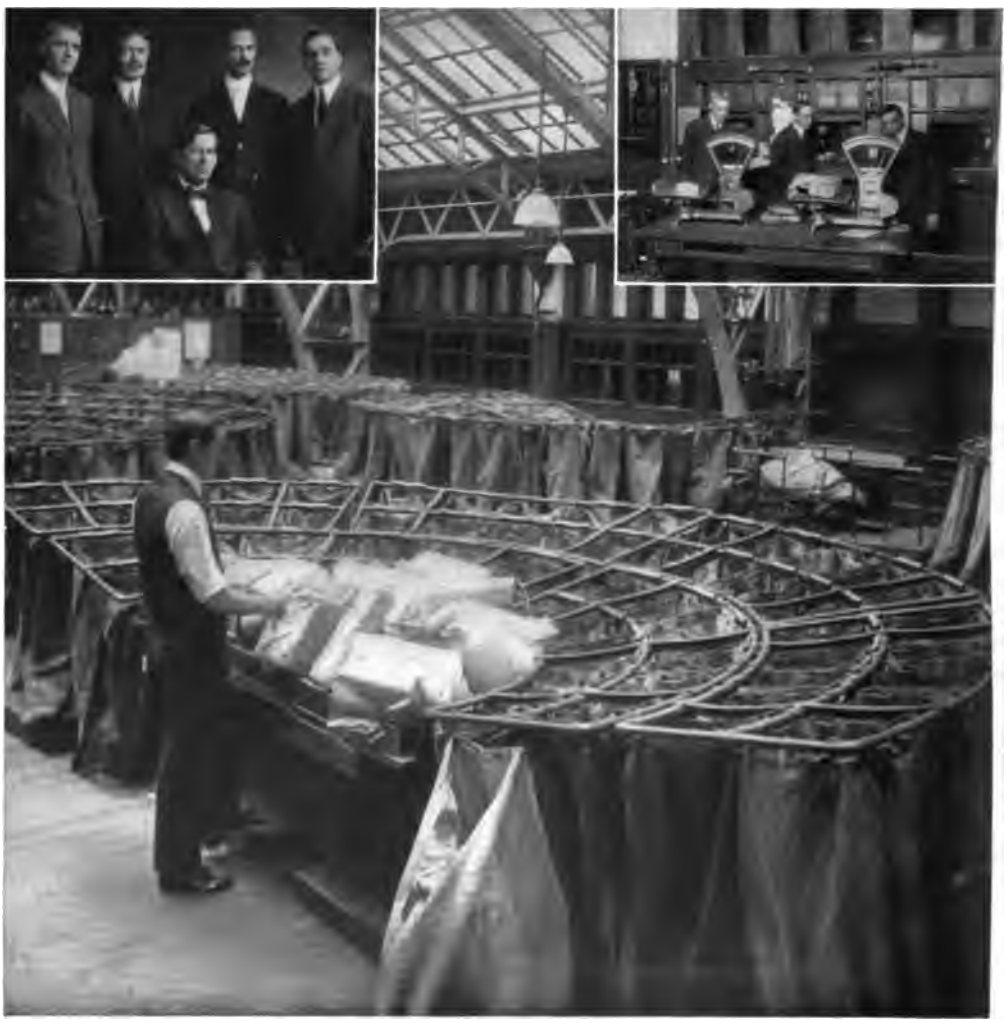
As illustrative of the difference in farm and city prices on these articles I have the exact figures for about a year ago. The two dozen eggs cost 44 cents, two pounds of butter 48 cents, two pounds of sausage 16 cents, and the chicken, three pounds, 30 cents, altogether $1.38 at the farm, about twenty miles from Washington, D. C. These took the roundabout processes of commerce and cost the consumer in Washington $2.70. These articles, about eleven pounds, might be made a standing order with the farmer, who would ship them on a given day every week through the postal van, as is done in England, in a limited measure. This would mean $1.17 saved on that list of

articles, or nearly 100 per cent. of their cost on the farm.

Of course many towns and cities have no rural routes, and so will have to resort to longer distances. The Parcel Post rate would be thirty-five cents if the farmer lived within fifty miles, by air line, forty-six cents if he lived a hundred and fifty miles, and fifty-seven cents if he lived three hundred miles distant. That is, the rate shifts from a cent a pound on the local route up to five cents a pound for three hundred miles.

Probably no greater blunder has ever been committed in the name of serving the people than that committed by the Senate conferees, who, in the closing hours of the last session of Congress, forced the five-cent rate on the three-hundred mile zone, instead of three cents; four cents on the one hundred and fifty mile zone, instead of two, and three cents on the fifty mile zone, instead of one, the lower rates provided in the House bill.

The House rates were formulated on a basis to give the Postal Department one-



INDIVIDUALS AND SCENES IDENTIFIED WITH THE PARCEL POST

1 Group of men who figure out the Parcel Post rates and rules: sitting, Robert S. Sharp, Chief P. O. Inspector; standing, left to right, George L. Wood, Superintendent of the Division of Rural Mails; A. A. Fisher, Chief Clerk to Second Assistant Postmaster General; C. B. Hurrey, Chief Clerk to Third Assistant Postmaster General; John C. Koons, Superintendent of Division of Salary and Allowances. (*Photo., Harris & Ewing*)
2 New scales specially made for Parcel Post packages. (*Photo., Underwood & Underwood*)
3 Assorting bin. (*Photo., Harris & Ewing*)

third profit. The rates now in the bill are so prohibitive as in effect to deprive the Post Office and the people of any profit, by killing the potential traffic.

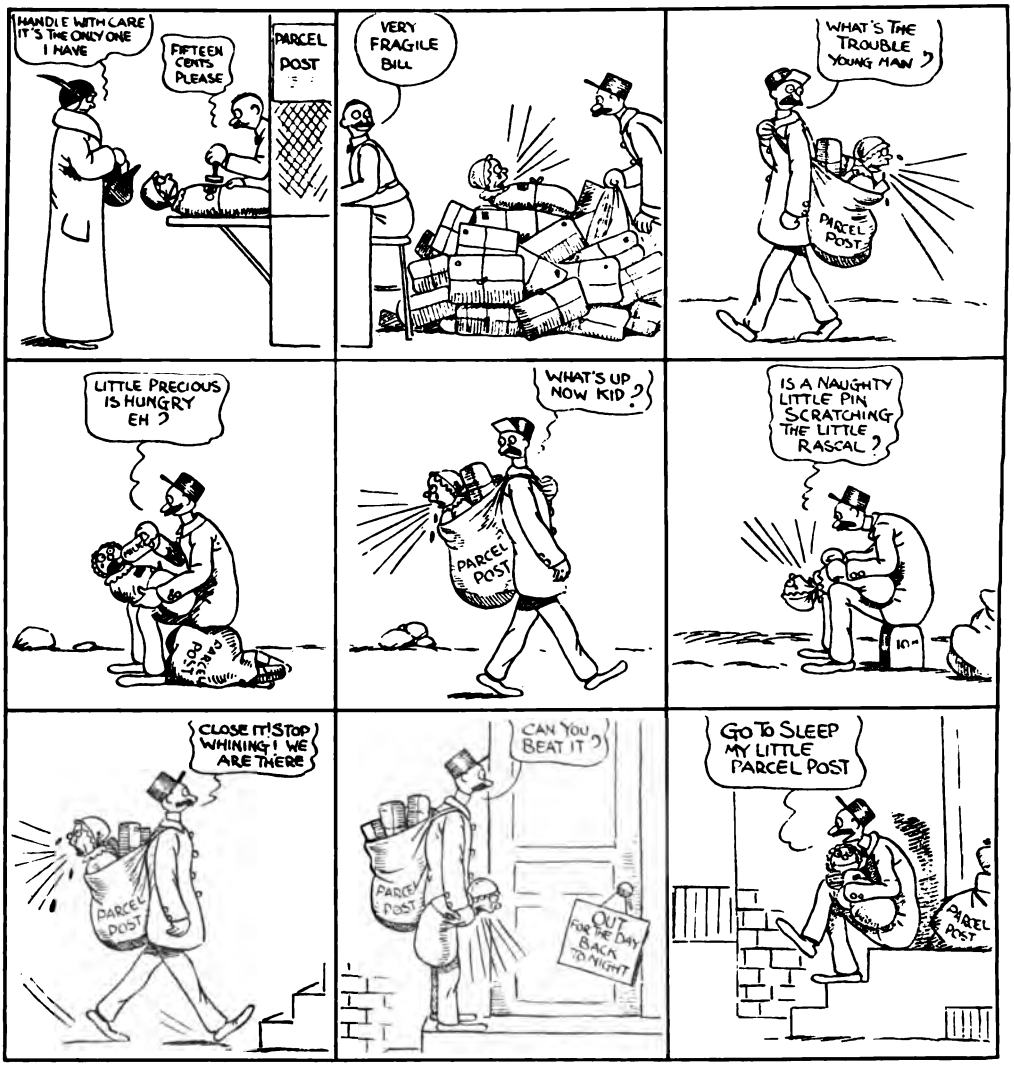
The House provisions in the Parcel Post bill recognized that the making of rates and other conditions of shipment to protect the Treasury at one end and to move the potential traffic and render the highest public service at the other, was necessarily an administrative, rather than a legislative work. It gave the Postmaster-General, subject to the approval of the Interstate Commerce Commission, power to change the rates, the weight limit, the zones, the classification and all conditions of mailability. With these powers the Postmaster-General can discreetly construct a complete system of transportation for the small shipment, filling the gap that now obtains between the railway minimum of a hundred pounds and the postal maximum of eleven pounds, and giving the public a rate about one-half that now charged by the express companies. It will cost to pay for railway transportation under the present laws, with this traffic added, about one cent a pound for two hundred and fifty miles, and it will cost for postal handling, including collection and delivery, about two and one-half cents for the first pound, running up to about twenty cents for a hundred pounds. Thus, as a tentative proposition, a rate system could be established as follows: Three cents for the first pound and one-half cent for each additional pound up to one hundred miles, and one-half cent a pound for each additional hundred miles of distance, with no rate to be greater than twelve cents a pound. Here you have a rate structure so simple that a child could remember it, and yet one that would yield the postal system about twenty per cent. profit, computed on present cost bases.

Of course the farmers and consumers should have wisdom enough to get together. In England the farmer advertises his prices in the London papers. Farmers within shipping distance of markets, under present rates, must take some means to acquaint the consumer with their supplies and prices. Until credit relations develop between them the farmer can tack on the shipment a C. O. D., under regulations soon to be provided, at a trifling charge.

What the farmer can do, the manufacturer can do likewise for his retail products; that is, he can advertise and do a direct retail trade, where the rates permit. But this statement is subject to an important qualification, of course. The consumer, in practice, will only deal with the manufacturer where his products are standardized and have a known value and character in the market.

POSTMASTER-GENERAL HITCHCOCK INAUGURATING THE PARCEL POST

A word to the farmers and truckers who wish to make the best use of their markets. They should take the most up-to-date measures for packing purposes. Paper box manufacturers have already worked out


HANDLE WITH CARE IT'S THE ONLY ONE I HAVE
FIFTEEN CENTS PLEASE
PARCEL POST
VERY FRAGILE BILL
WHAT'S THE TROUBLE YOUNG MAN?
PARCEL POST
LITTLE PRECIOUS IS HUNGRY EH?
WHAT'S UP NOW KID?
PARCEL POST
IS A NAUGHTY LITTLE PIN SCRATCHING THE LITTLE RASCAL?
CLOSE IT! STOP WHINING! WE ARE THERE
PARCEL POST
CAN YOU BEAT IT?
PARCEL POST
OUT FOR THE DAY BACK TO-NIGHT
GO TO SLEEP MY LITTLE PARCEL POST
PARCEL POST

(Copyright, The New York World)

containers that will carry eggs, butter, chicken and other farm products without danger of injury or loss. These containers, I understand, may be very cheaply manufactured, and the shipper should examine their availability, both to save himself trouble and difficulty in packing and the possibility of injury to the shipment.

It is going to take some time for both farmers and consumers to learn the art of dealing together, however easy the conditions are made. But farm products usually sell in city markets at about twice what they bring on the farm, and surely this difference in price ought to provide the ultimate buyer and the farmer sufficient motive and profit to get together very soon. By the time they have learned how to cooperate the extortionate rates and the low-weight limit of eleven pounds will have been removed.

And this brings me to the duty of public men in respect to this subject. In preparing the House Parcel Post bill, at the request of its leaders, knowing that the subject of rates and weight limit and other conditions of service could only be worked out intelligently by administrative methods, I inserted a provision giving the Postmaster-General power to reform the

rates, weight limit, classification of articles admissible, zones, and all other conditions of mailability, "in order to promote the service to the public."

Now, what is the function of a Parcel Post? Obviously it is to move direct from producer to consumer, as the first buyer, instead of the third or fourth, all products sufficiently standardized to permit the consumer to safely buy direct. In order to do this the rates should be as low as the costs of service permit and the weight limit as high as the retail weight of such products ordinarily runs in individual consumption. Other countries have a weight limit of more than a hundred pounds, and Belgium, the paragon in this matter, is proposing to raise its weight limit from 132 pounds to 220 pounds.

The whole subject is now "up to" the Postmaster-General. If the rates are too high, if the weight limit is prohibitive, if the classifications are inadequate, blame the Postmaster-General. Not as a man, of course, but as the institution to which Congress has given the power and invitation to construct a satisfactory transportation system for producers and consumers, and upon which it has imposed the responsibility to make all these things right. But, oh, what an opportunity for constructive work, which, if well done, in the broadest conception of public progress and public service, would render the Postmaster-General a star of the first magnitude in postal history.

The conditions are such that he can initiate a system that will take the place of the express companies and extend their service to every village and farm, at rates one-half those they have been charging, effectively supplying transportation direct from producer to consumer. He can utilize the fast freight rates and service on the railroads to give rates about one-quarter those now charged by the express companies for articles of shipment that could not pay for the relatively costly passenger train service. In two years he can make enough profit by thus utilizing the rural free delivery structure, now profitless and a dead expense, and out of this fast freight service to make "penny" postage practicable, without changing the postage rates for newspapers and magazines.

FORTY DAYS WITHOUT A RUDDER

The above picture, used through courtesy of the London *Sphere*, is of the British steamship *Snowdon Range*. This big liner, en route from Philadelphia to Queenstown, was pounded by heavy seas, lost her rudder, and for forty days, in wildest weather, drifted at the mercy of wind and wave. Many bold attempts were made for rescue but all were unsuccessful until the vessel, guided by the wonderful luck that sustained her through the ordeal, drifted of her own accord safely into the harbor as shown above. Her entire crew withstood the hardships and were little worse for their experience.

THE NEAREST PORT TO PANAMA

By WILLIS B. POWELL

"FOURTEEN years ago there was so little commerce by sea in and out of Tampa that no record was kept of it. To-day, Tampa ranks tenth of all American cities as a producer of revenue for Uncle Sam." Such is the simple, direct statement of fact advanced by Mr. Powell, secretary of the Tampa Board of Trade, in support of his contention of geographical and commercial supremacy for the Florida Gulf port in respect to the opening of the Panama Canal, with its inevitable re-adjustment of world traffic.

NEAREST to Panama of all the adequate Atlantic Coast ports of the United States is Tampa. Tampa lays no claim to being the "original Wilson man," but it does claim to be the "original Panama Canal booster." Other places have talked about port preparedness for the Panama Canal trade and have built on paper steamships to traverse the seas to the big ditch; other places are preparing for Panama Canal expositions. But Tampa has anticipated all of these things. She already has had her exposition. She has her boats in commission. And her port is in readiness to receive the vessels of the seven seas and all that therein is.

It was in December, 1905, that Gov. N. B. Broward caused to be issued a proclamation declaring that in the month of February, 1908, there would be held an International and Isthmian Exposition, in honor and celebration of the commencement of work on the Panama Canal.

Tampa sent a delegation of her citizens to appear before Congress and to seek national aid for the enterprise, and in 1906, Congress, in granting certain concessions, went on record with the following statement: "Tampa is the nearest and most available port of any importance in the United States to the Panama Canal."

Backed up by state and federal aid, there was held in Tampa, in Februray, 1910, a Panama Canal celebration. Among the distinguished guests of the southern Florida metropolis during the festival period was the Hon. James Bryce, British ambassador to the United States. The representative of King Edward paid the following tribute to the electric energy and zeal which form the keystone of Tampa's commanding position:

"I have just been hearing from the officers of the United States Army that when they had occasion to use Tampa as a port of embarkation, during the Spanish-

THIS WAS THE PORT OF TAMPA TWELVE YEARS AGO

ONE OF THE 300 CIGAR FACTORIES THAT MAKE TAMPA FAMOUS

BIRD'S-EYE VIEW OF TAMPA HARBOR, 1912, SHOWING ESTUARY IMPROVEMENT WHICH WILL ADD 5½ MILES OF DOCKAGE

American war, it was then not much more than a fishing village, and it is only within the last ten years that you have risen to a great and flourishing city with a magnificent harbor. You have a seaport unusually favored by nature, and, therefore, with unusually good prospects of rapid development.

"With your bay sheltered, and with deep water, it is not only an admirable outlet for the products of your soil, and for the phosphates which have become such an important article of export, but it is, also, most favorably placed for an international commerce which is rapidly developing, and which we may expect to extend even more strikingly in the future.

"I understand that you are the nearest port, that is to say, the nearest adequate harbor, on the coast of the United States, to the cities opening before long to the great international canal. The canal is the most extraordinary effort that man has ever made to improve on nature, and to make nature subserve his purpose."

While other places have been telling of the worth of the Panama Canal to their various communities, Tampa, through her far-seeing municipal government, has been industriously building five and one-half miles of deep sea dockage, so as to be prepared for the business which by right belongs to her, and which must come to her when the terminal facilities are expanded.

The story of Tampa's port reads like a romance, yet it is real—so real that the most optimistic sometimes rubs his eyes and wonders if it were but a dream.

Fourteen years ago there was so little commerce by sea in and out of Tampa that no record was kept of it. A year later 32,000 tons were recorded, and the valuation was small. In 1912, the total tonnage was 1,858,000, with a valuation of more than $30,000,000. To-day Tampa stands tenth of all American cities as a producer of revenue for Uncle Sam. She turns into the United States treasury almost $2,000,000 a year—in 1912 the total was $1,901,107.61, or $200,000 more than that of the previous year. With each advancing year an increase of from $200,000 to $300,000 is recorded.

There is a reason for the great increase in traffic, and yet the city has not been able to handle all that has been offered by the trade carriers of the sea. But there is a time coming, and it is not far off, when Tampa will accept and deliver all commodities offered her. Her estuary project, which converts a sawgrass marsh into a 24-foot deep slip, 500 feet wide, and nearly two and one-half miles long, will serve commerce for many years, and provision has been made to swing the vessels broadside of the channel into 400-foot slips, and thus more than double the original docking facilities.

Behind Tampa there lie unlimited quantities of phosphate, Fuller's earth, glass sand, fruit and vegetables, lumber, naval stores, cattle, and the products of the mill which will convert our timber into merchantable products. Before us lies the entire world, and it is a big one.

Tampa is not unduly exercised by "dreams of untold tonnage" to be passed through her port from the neighboring territory to the countries below and beyond, to the Far East. Before dreams become true, the State of Florida must needs be greatly developed—her 35,000,000 acres of land must yield merchantable stuff instead of saw palmettos; the State's industries must fabricate more of raw material, and there must be more railroads and better freight rates.

The roads must run to Tampa from the cotton fields above, from the coal and iron fields of Alabama, from the States where marble and cement and brick and manufactured articles of every kind can be drawn upon to make cargo. And these roads are coming. Already the Atlantic, Birmingham & Alabama Railroad indicates, by dotted lines on its folder, that such a road is in prospect. Already the Atlantic Coast Line Railroad indicates that such a road will be built, and further shows that part of the work is now under construction. The Seaboard Air Line Railroad has bought in the Tampa Northern Railroad and it is understood it will not let the Atlantic Coast Line come into Tampa from the west without it, also, entering the same field.

But dreams and forecasts and tentative

FROM THE REMOTEST PARTS OF THE GLOBE COME CRAFT TO TAMPA BEARING ALL SORTS OF LADING

TYPES OF MODERN FAST PASSENGER LINERS THAT REGULARLY MAKE TAMPA A PORT OF CALL

propositions aside—even eliminating the railroad prospects—Tampa will be benefited directly and immediately by the opening of the Panama Canal.

The distances from the various ports in America to the Panama Canal are given in nautical miles by Anderson's tables as follows:

Tampa	1,216
Pensacola	1,340
Mobile	1,358
New Orleans	1,302
Galveston	1,400
Savannah	1,508
Baltimore	1,962
Philadelphia	1,938
New York	1,913

By tables compiled by the Chamber of Commerce of the United States it is shown that the Panama Canal will put Tampa 5,585 miles nearer Yokohama and save in steaming, with a ten-knot boat, 22.8 days. Japan is using our phosphate. It would have used more were not the freight so expensive. The charter of a vessel which can carry [illegible] tons of phosphate is about $[illegible] a [illegible]. The opening of the canal [illegible] delivered in Japan for [illegible] a ton less than at present. [illegible] great impetus to the [illegible] Florida with the soil-impoverished countries of China and Japan, and be it known that within fifty miles of Tampa there is enough phosphate to supply the world for ages. Tampa's benefit by the opening of the canal is not problematical. It is a certainty, and were it to stop at the phosphate trade she might be content but she will not be content.

It is the opinion of all wise men of Tampa, which means about 8,000 heads of families, that Uncle Sam has his eyes on the port as a snug harbor in case of war. Hillsboro Bay lies fifty-eight miles from the forts which guard its entrance. There are [illegible] and a mining squad which in [illegible] hours's time can make the harbor [illegible] as dangerous as a live [illegible]

Hillsboro Bay is large enough to harbor the entire navy of the United States. Here the great [illegible] attack by sea or land. [illegible] salvage for vessels [illegible] [illegible] [illegible]

THE SONG OF DEEP WATERS

By JAMES HAY, JR.

I am the Mother of Commerce—the soft-breasted mother of the healing streams of trade.

I carry vessels heavy-laden with gold to their desired ports, and I bear cargoes of death to their early graves.

I was the hand-maiden of Jewish supremacy in trade. I built the glory of Carthage. Light-footed, with the winds as my lovers, I served the ancient traffic of the Red Sea and braved the perils of the Indian Ocean.

I was the goddess of power on the Euphrates, and Constantinople and Egypt have prayed at my knee.

I made Venice, my favorite child, the mistress of all her seas a thousand years ago, and to-day, still dependent on my aid, she towers majestically above the waters.

I explored the Atlantic Ocean, and my fingers carried the ships of Columbus to a new and mighty land.

I carried from America to Europe the prodigal stores of gold and silver given up by Mexico and Peru. But for me, there would be now no great American Republic, and, without my help, the wealth of India and China would be unknown to the treasure vaults of the New World.

All this—the first blind efforts to sail the seas, the development of the galley, the sailing ship and the steamboat—has come from my teachings. And, before my affrighted eyes, the great battles of history have been fought, and upon the waves, which are the silken fringes of my robe, has fallen the blood of heroes.

I am the Mother of Commerce—of wealth and of woe.

And to-day my power excels that of all other things relating to the commerce of men. I do not stop at bringing to the United States from India soft silks, from Japan splendid paintings, from China jars and pottery, most wonderfully wrought.

Already I have done great things for America. The canoes of Indians have borne from the north to the south costly furs, and brilliant gems, and the fruits of the forest.

Later, larger steamboats have carried from one section of the country to every other section the things wished for by men for utility and those desired by women for adornment.

I am the Mother of Commerce—and, being the mother, I neither plead nor urge. I command!

I wish larger palaces and more gorgeous corridors for my dwelling places. I who have done so much deserve to be given more than others. The channels upon which my rolling steps are made must grow in depth and breadth.

I have given more, far more, to the sons of men than the world suspects. I can do things beyond the dreams of every man if the opportunity is placed within my reach.

To the waterways of the United States are due millions upon millions of our wealth. Upon deeper waterways and wider channels, I, the Mother of Rolling Waters, can do many times over what I have done already.

Every city of great size and overpowering wealth the world over owes its predominance and its pride to what I have given it.

I will lift up your cities. I will add to the wealth of all your people. I am the soft-breasted mother of all the healing streams of trade. I am, as are all mothers of the world, more powerful when more deep.

I have builded the great cities. I have made the great fortunes of men.

Give me the means and I will give you the fruits.

The song of deep waters is a glorious music today. Give me the depth and the width for which I yearn, and I will make it a song that finds its echo in the growing of the people and in the gold pieces of your treasury.

I am the Mother of Commerce—and commerce is the mistress of the world.

THE BUSIEST CANALS ON EARTH

By S. A. THOMPSON

"ALTHOUGH *authenticated by statistics as accurate as any in existence, the history of the growth of traffic at 'the Soo' reads more like fiction than like sober fact. It is said that in 1850 one old gray horse, hauling a car on a tramway, handled all the traffic which passed over the portage around the Sault de Ste. Marie.* * * * * *In 1912 the gates of the giant locks swung open for the passage of 22,778 vessels, carrying 72,472,676 tons of freight. This traffic was worth no less than $817,075,299.*"

BACK in 1849, or thereabouts, when the Senate of the United States was debating a bill to make a grant of public lands to aid the State of Michigan in building a canal at the outlet of Lake Superior, Henry Clay rose in his place and said:

"It is a scheme to squander the public resources upon a chimera beyond the remotest bounds of settlement, if not in the moon."

Photo by Bundy

How fate mocks those who, lacking the guidance of inspiration, yet presume to prophesy, was never better shown than in this case. For the grant of lands was made, the canal was built, being completed in 1855, population swept westward in a mighty flood until "The Great Lone Land" was filled with thriving commonwealths—and it is true to-day, and has been true for many years, that a greater volume of traffic is concentrated at the eastern end of Lake Superior than at any other spot in all the world.

After the grant was made by the Federal Government and while the matter was under consideration by the legislature of Michigan, E. B. Ward, of Detroit, who was considered one of the most far-sighted business men of his day, wrote to a member of that body that by advocating "locks of such enormous dimensions, which will not be needed for a hundred years, if ever, you are jeopardizing the success of the whole project."

The two tandem locks in the State canal, against the "enormous dimensions" of which Mr. Ward protested, were each 350 feet long, and 70 feet wide, with 11½ feet of water on the miter sill and a lift of 9 feet. Mr. Ward was no more of a success as a prophet than Henry Clay. Only fifty-seven years have passed, instead of a hundred, and what do we find? The little locks of 1855, as they now are called, were supplemented in 1881 by a lock, built by the Federal Government—which is 515 feet long and 80 feet wide, has 16 feet of water on its miter sill and overcomes the difference of 18 to 20 feet in elevation with a single lift—and were blown up with dynamite and superseded in 1896, by a new lock 800 feet long, 100 feet wide and with 21 feet of water on its miter sill.

Meantime a new canal had been built on the Canadian side of the river with a lock 900 feet long, 60 feet wide and 22 feet deep. It would surely seem that three such locks as these could care for all the traffic on Lake Superior until the end of time, but not so. Work is already well advanced on the construction of an entirely new canal on the American side which will be opened to traffic in 1914 and which will have a lock with really "enormous dimensions"—1350 feet long, 80 feet wide and 24½ feet deep at extreme low water, which will mean about 26 feet at the average stage.

Nor is this all, for provision has already been made for building a fourth lock, which is to be of the same size as the one last mentioned—and as soon as that is done it is meant to deepen, and possibly lengthen, the larger of the two locks now in use. All this deepening of locks will call for a corresponding deepening of the channels and, ultimately, of the principal

FROM 1855 TO 1881 THE STATE LOCKS SUPPLIED THE ONLY GATEWAY TO LAKE SUPERIOR

harbors of the lakes. The present standard depth of the connecting channels is 20 feet in earth and 21 feet in rock.

It goes without saying that these improvements have involved a large expense. The first canal and locks cost the State of Michigan about $1,000,000, the proceeds of 750,000 acres of land granted by the Federal Government. The total appropriations made by the United States for improvements at the falls of the St. Mary's River from 1856 to July 12, 1912, amount to $12,932,822.19. In addition there has been expended for the operating and care of the canal up to June 30, 1912, $2,112,654.49, making a grand total of $16,045,476.68.

This includes only the expenditures immediately at the falls. Work on St. Mary's River at points below the falls has been done at a cost of $8,409,115; work at various points on the "Twenty Foot Channel" has cost $3,365,000 and $12,000,000 has been expended on the channels in the Detroit River. While the work in Detroit River is of benefit to the traffic of the other lakes as well as to that of Lake Superior, it had to be done if the big boats that could get through the locks at St. Mary's Falls were to run to and from the ports of Lake Erie.

Whether we consider the $40,000,000 spent on the channels of the lakes, the $25,000,000 spent on the St. Mary's River or the $16,000,000 used directly at the falls, the amount is large enough to warrant the question whether the expenditure has been justified by the results.

Although authenticated by statistics as accurate as any in existence, the history of the growth of traffic at "The Soo" reads more like fiction than like sober fact. It is said that in 1850 one old gray horse, hauling a car on a tramway, handled all the traffic which passed over the portage around the Sault de Ste. Marie. During the first year the little locks were open, only 14,503 tons of freight passed through. It was not until twenty-one years later that 1,000,000 tons was reached; in 1892 the tonnage was more than 11,000,000; in 1899 more than 25,000,000; in 1906, nearly 52,000,000; and in 1912 the gates of the giant locks

THE AMERICAN CANAL AT ST. MARY'S FALLS. WEITZEL LOCK ON THE LEFT, POE LOCK ON THE RIGHT

swung open for the passage of 22,778 vessels carrying 72,472,676 tons of freight.

The growth of traffic by decades and the total tonnage from 1855 to 1912, inclusive, are shown in the following table:

1855-1864	1,203,358
1865-1874	4,829,247
1875-1884	14,868,639
1885-1894	80,343,218
1895-1904	253,002,697
1905-1912	441,837,790
Total	796,084,949

One can gain a clearer idea of the tremendous effect which the opening of the canal has had upon the commerce and industry of the United States by noting the commodities which constitute the bulk of the traffic.

One item of the commerce in 1855 consisted of 1447 net tons of iron ore shipped from the newly-opened mines on the Marquette range in Upper Michigan. Except for that first year the tonnage of iron ore has always been greater than that of any other commodity, and during most of the time it has been greater than that of all others combined. Last year the shipments of iron ore amounted to 46,303,423 net tons, which exceeded the combined weight of all other articles by more than 20,000,000 tons. The total shipments of iron ore through the "Soo" canals have reached the colossal total of 490,539,866 tons. It is due first to the great deposits of high-grade ore in the Lake Superior region, and next, to the cheap transportation of that ore made possible by the building of the canal, that the United States ranks first among the nations of the earth in the production of iron and steel.

As might be expected, since the Northwest is a country of cold winters, the shipment of coal began at the first opportunity. Only 1441 tons went west in 1855, while the shipments for 1912 were 14,931,594 tons, and the total shipments from the beginning have been 157,686,117 tons. Think of all the locomotives run, the factory wheels turned, the dinners cooked and the homes made comfortable by the burning of this vast quantity of coal!

Naturally, also, flour was one of the first commodities to be moved through the canal, 10,289 barrels being shipped

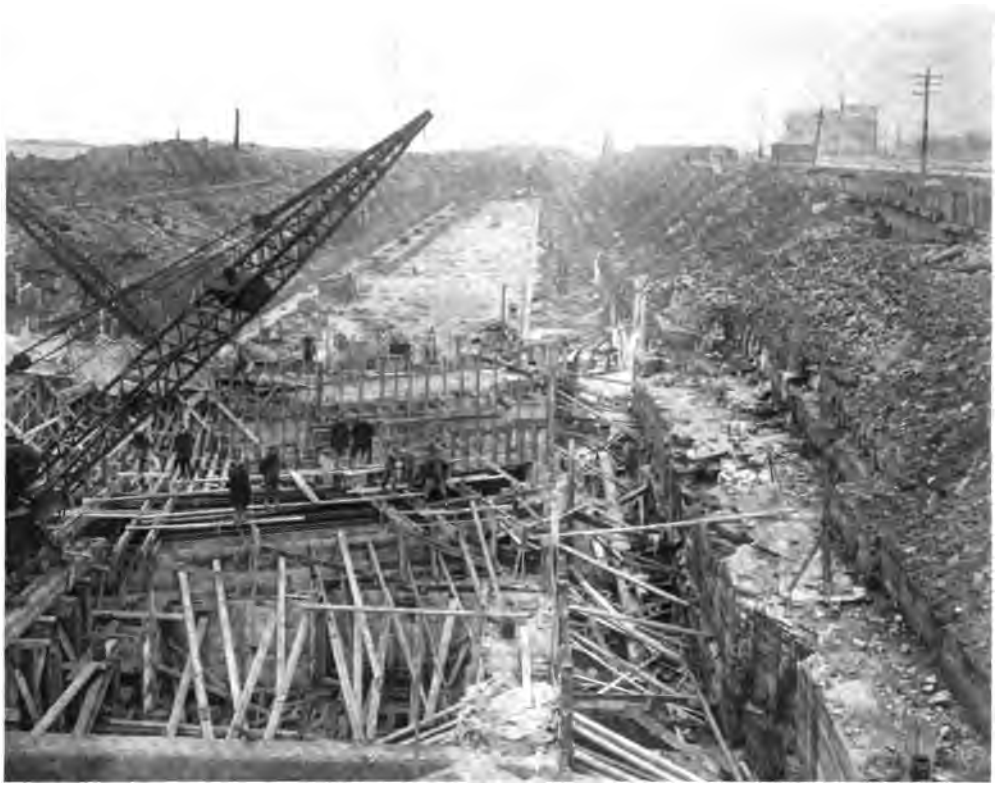
during the first year. For the first seventeen years all the flour went westward, then the current turned in the other direction and grew swiftly in volume, the total for 1912 being 8,652,153 barrels and for the entire time 176,010,733 barrels.

Except for a few bushels in 1859 and 1861, which were probably used for seed, no wheat was shipped until 1870, when 49,700 bushels are reported. By the next year this had increased to 1,376,705 bushels, and following the settlement of Minnesota, the Dakotas and, still later, of the Canadian Northwest, the flood of golden grain grew ever greater until it amounted, in 1912, to 174,086,456 bushels, and the total for the entire time is 1,702,988,678 bushels. It took 880,053,665 bushels of wheat to make the flour already mentioned, besides which there have been 651,692,255 bushels of other grain, making a grand total of 3,234,734,598 bushels of grain which the "Soo" has helped to pass on to feed a hungry world.

Besides the items already mentioned, there have been carried through the canals 3,067,435 tons of copper, 6,926,423 tons of manufactured and pig iron, 10,930,749 barrels of salt, 20,871,692 tons of general merchandise and 1,797,994 passengers.

Beginning with 1887, the U. S. engineers have reported the valuation of the cargoes passing in and out of Lake Superior. The detailed report for 1912 is not yet published, but using the same unit values as were employed in 1911, the traffic of last year was worth no less than $817,075,299, and the total value since 1886 amounts to $8,272,148,001. A conservative estimate gives $350,000,000 as the value of the 28,685,631 tons of traffic carried previous to 1887, making a grand total for the whole period of $8,622,148,001.

This means that if the whole $40,000,000, which has been expended on locks, canals and channels from Lake Superior through to Lake Erie, is charged against the business of Lake Superior alone—



WORK IN PROGRESS ON THE NEW AMERICAN LOCK, WHICH WILL BE THE LARGEST IN THE WORLD

BLOCKADE OF LAKE LINERS AND FREIGHTERS AWAITING PASSAGE THROUGH THE SOO CANAL

although much of it is of value to the commerce of other lakes, as well—it amounts to only five cents per ton of weight and to less than one-half cent per dollar of value of the traffic which has already been carried.

Who can tell what further growth of traffic the future is to bring? The late General Poe, who built the locks that bears his name, once said: "The way this lake commerce grows is amazing. I have watched it for thirty-five years, but neither I nor any one I know has been able to expand his ideas as fast as it has grown. The wildest expectations of one year seem absurdly tame beside the actual facts of the next. I will not live to see it for I am an old man now, but some day this lock of 1881, which is now the finest in the world, will be blown up with dynamite just as the little locks of 1855 were to make way for one with 20 feet perhaps more or less of water on its outer sill.

"It would be interesting to know what [illegible]"

[illegible]

OFFICERS OF WOMAN'S NATIONAL RIVERS AND HARBORS CONGRESS
AND EXAMPLES OF "THE RIVER BEAUTIFUL"

Mrs. Joseph M. Strout, Portland, Me., president (upper left); Mrs. Mary M. North, Herndon, Va., recording secretary (upper right); Mrs. Katherine H. Stuart, Alexandria, Va. (lower left); Mrs. F. H. Newell, Washington, D. C., second vice-president (lower right)

THE FAIR ADVOCATES OF WATERWAYS

By MRS. MARY M. NORTH

*"IN conjunction with their campaign for the deepening of channels, the women are working for the sanitation and beautification of waterways. * * * * The tie has grown stronger. * * * * 'while the stakes have been strengthened and the lines lengthened' until even the islands of the sea are interested and are become a great power for good." The "river beautiful," a characteristically ideal aim of the Woman's National Rivers and Harbors Congress, is sounded by Mrs. North in her résumé of the utility campaign.*

The Woman's National Rivers and Harbors Congress is as patriotic an organization as any that exists. It strikes at the root of loyalty to country, by working to preserve to posterity the natural resources which a too prodigal ancestry came very near destroying, and which some of the present generation, were they not held in check by legislation, would finish, in their eagerness for wealth.

The organization came into existence June 29, 1908, with but seven members, in Shreveport, Louisiana, through the efforts of Mrs. Hoyle Tomkies, the first president; Mrs. Frances Shuttleworth, the first corresponding secretary, and Mrs. A. B. Avery, the first recording secretary. They pledged their fealty to the National Rivers and Harbors Congress, and from that time to the present the tie has grown stronger, the work has increased, while "the stakes have been strengthened and the lines lengthened" until even the islands of the sea are interested, and are a great power for good.

The third biennial convention of the Woman's National Rivers and Harbors Congress was held in Washington the fourth, fifth and sixth of December. The officers and state presidents from forty-two commonwealths gave very encouraging reports of the work, and there were, too, reports from Hawaii and the Philippines. The women are also working for the sanitation and beautification of waterways.

Among the speakers at the convention were: Henry S. Graves, U. S. Forester; M. O. Leighton, Chief Hydrographer, U. S. Geological Survey; Judge Watkins, D. C. Ellis, and C. J. Blanchard, Statistician of the U. S. Reclamation Service.

The officers elected are: President, Mrs. Joseph M. Strout, Portland, Maine; first vice-president, Miss Katherine Stuart, Alexandria, Virginia; second vice-president, Mrs. F. H. Newell, Washington, D. C.; corresponding secretary-treasurer, Mrs. Elmer G. Laurence, Cincinnati, Ohio; recording secretary, Mrs. Joseph B. North, Herndon, Virginia; auditor, Mrs. H. G. Whiteside, Louisville, Kentucky; vice-presidents-at-large, Mrs. T. E. Wilder, Illinois; Mrs. E. A. Houseman, Connecticut; Mrs. A. Barton Miller, South Carolina; Mrs. Joseph E. Ransdell, Louisiana; Mrs. D. U. Fletcher, Florida; Mrs. Walter J. Frear, Hawaii.

There are federated clubs representing about twenty thousand women who are taking a personal interest in the movement.

The objects of the organization are:

The promotion of the improvement of the meritorious inland waterways and harbors, the preservation of the forests of the nation, and the conservation of the natural resources.

To endeavor to secure proper legislation, both national and state, together with adequate appropriations.

To educate the people to the importance of the fact that the National Government, having control and improvement of the rivers and harbors of the country, is bound to discharge these obligations promptly and by sound business methods, chief among which is the placing of annual appropriations for rivers and harbors on a parity with other great appropriation bills.

We urge the continuation and the extension of such policies as will secure large forest reserves at the head waters of all river systems and general forest development throughout the nation.

THE DROGENAPSTOREN, ZUTPHEN, PEERS AT ITS REFLECTION IN THE MOAT

THE ELUSIVE DUTCH RHINE

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

*"THE Rhine, we learned at school, * * * * drains to the North Sea. Quite so. But where?" This question, so naively asked by Mrs. Albrecht, must lure many a reader to his or her geography again, and the tracing of the storied Rhine to its doubtful place of surrender to the sea, is the "motif" of the second article descriptive of inviting foreign waterways to be contributed by this faithful "Cicerone" and her artist husband, whose scenes so gorgeously enhance her poetic observations.*

IT seemed a little ludicrous that summer—we admit now that it seemed so to us, an idle pretext for a charming watery excursion that needed none—to announce an exploration of the mouth of the Rhine. A very reasonable river sometimes conceals its source for entirely private reasons, but its mouth is usually a self-evident fact; a bit wide-spread, perhaps, as in the Nile or our own Mississippi, but for that reason all the more recognizable. The Rhine, we learned at school, rises in the higher Alps and drains to the North Sea. Ah, yes! Quite so. But where?

You fortunate travellers, who have seen its small beginnings in the glaciers of the Rheinwald valley or the Toma lake, its milky flood at Reichenau, its broad blue mirror at Lake Constance, its green billows foaming white over the rocks of Schaffhausen; who have come to it from the Vosges or the Black Forest and followed it down by crag and vineyard and castle to Cologne, where then does it go? To Holland and the ocean. No doubt. But where? Beneath Leiden's bridges there creeps a slow-moving weary river which, at Katwijk's sluice-gates, must be lifted into the sea, and its neighbors call it the Rijn. It has borne that name for centuries. The country over which Leiden rules, the land it drained, was the Rijnland, yet today engineers deny absolutely that one drop of the mighty German river mirrors this old Dutch town. Where then does the great flood go, the flood which swirls by the Lorelei, reflects grim Ehrenbreitstein, bathes the Pfalz? "Dregs of French rivers," Napoleon called the Netherlands, and, doubtless, one day none too long ago in the world's lengthy history, but far and dim compared with America's four hundred years, the Netherlands were nothing but the boggy delta of that Rhine whose mouth we seek in vain. Possibly the engineers are quite right; no Rhine water may reach that stream that alone carries the name to the sea but—possibly, also, no current crossing the southwestern Netherlands to the North Sea is utterly devoid of some drops of that great river which passes Mainz and Cologne.

Soon after entering the Lowlands the Rhine suffers division, one arm curving northward, carrying the name past Arnhem and on to Wijk, while the stronger stream rushes swiftly on as the Waal past Nijmegen's hills. At this parting of waters we began our voyaging, tracing now the name, now following the greater current, doubling, retracing, crossing from branch to branch, fascinated alike by the unsolvable riddle and the adventures of the way. For one can find adventures even upon peaceful Dutch waters; adventures from the past made vivid by Motley's luminous pages, thrilling, inspiring, incomparably glorious adventures here given their proper setting; adventures of the present, ludicrous, exasperating, stimulating, depressing occurrences common to those who travel in places "off the beaten trail."

And, although very close to it, the quaint old cities upon these waterways are off it. Very little known to their neighbors, the average tourist rarely

makes their acquaintance, although most of them are readily reachable by road and by water. Boats coming down the Rhine call regularly at them and—those especially whose course lies wholly within the Netherlands—at many a place between. They bring a very various and very transient cargo—cherries for the Rotterdam market, cows for a Breda fair, horses for Arnhem perhaps, goats, pigs, sheep, potatoes, cheeses for anywhere. With one's own motor boat one would be far more independent, but how many funny scenes, pleasant chats, friendly faces would then be lost to memory?

Romantic legend does not thrive in the open country of the lower Rhine as it does among German rocks and castles; nevertheless these picturesque old towns along its branches have interesting tales to tell, interwoven of fact and fancy, and if the flat shores are less picturesque than beetling crags, the flood mirrors many a towering wind-mill, quaint water-gate or stately church with chiming bells which can calmly challenge the beauties of the upper river.

Just before the Rhine reaches Arnhem it is linked by canal to the Gueldrian Ijssel and made to send some of its waters northward to the Zuider Zee. Old as the days of Drusus is this canal. The river, a highroad for wandering tribes, for conquering armies, for wandering merchants and soldiers of fortune since the days when Europe was young, brought down upon its current in time those Roman soldiers and engineers in whose train roads, canals and bridges, camps, castles and towns rose in might.

They sought here a swift road to the North Sea and found none. They watched the great river overflowing its banks each springtime, losing itself far to the westward among the rich lands that it then laid waste. The canal served a dual purpose. It drained ground for Roman camps; it gave Drusus his path to the sea. Although the Rhine here loses name and identity, a goodly portion of it, with the "silvery Ijssel," must flow smoothly by Zutphen and Deventer to pretty Kampen and the Zuider Zee.

Shall we follow the name westward or this "scape-goat" current northward? Arnhem can easily wait; its riches have so often been sung, its praises so loudly chanted. We have made up our minds not to like it. It is self-sufficient. Let us go rather to Zutphen, of whom none, but Motley, tells us a word, and that of so long ago. We take it for granted that you know it, that brave story of Sir Philip Sidney, who got his death-wound here. It is very sweet and very piteous, and gallant like all that concerns this knight without reproach, and if you do not know it we shall nevertheless not venture upon the telling of it; for since Motley did it, no one else can do it so well again.

Between flat green meadows the Ijssel flows, and those smooth green walls which look to my untrained eyes like marvellously well-kept banks, a thought too regular for beauty, are dikes protecting those pleasant meadows from flood. Gone are all the dreams of childish fancy, the sheer straight walls imagination pictured, an imagination full-fed by tales of heroic small boys stopping a leak with a pudgy finger and saving a town. Poor showing those walls of fancy would make in flood-time, no doubt—but how picturesque they were! Even yet I seem to regret them, although I have learned upon Holland waterways many a lesson in real values where water is to be dealt with.

Zutphen sits unconcernedly beside her silvery river; well protected is she from flood upon her well-kept banks. Towers soar from a mass of greenery, red roofs twinkle, blue blouses gleam softly, all doubled upon the broad stream. Romantic, Zutphen is not, but of good war stories she has plenty, and the quaintest of winding streets. Curious mixture of "modern improvement" and mediæval custom, Zutphen lights her streets with electricity, but posts a watchman nightly in her tall church tower to look for fire.

"What was that horn blowing all night?" I asked the waiter as I rubbed my eyes sleepily over the morning chocolate after my first night in Zutphen. "The Watchman, Mevrouw, he looks for fire." "Where was the fire?" "But there was none. Mevrouw; he blew because there was none, every hour to the north and the south and the east and the west to let us know that we may sleep in peace." Now I, for one, have a rooted dislike to being waked up every hour to be told I can go to sleep again, and upon this point Zutphen and I never agreed. She did not

ZUTPHEN'S OLD WATERGATE, FROM WITHIN THE CITY

THE KORENBEURSBRUG AND THE STADHUISTOREN, LEIDEN
NO RHINE WATER MAY REACH THE RIJN, THAT STREAM THAT ALONE CARRIES THE NAME TO SEA

express her feelings openly, as I did. But I know she is wondering from what uncivilized, unguarded town we came. What happens when the watchman discovers a blaze it was never our good fortune to learn; the city slept and waked and slept placidly again throughout our stay.

Zutphen's great church is dedicated to St. Walburga and if you tarry long in the Netherlands you will be glad of it. Lady saints seem especially unpopular there and St. Martin has everything his own way. It is nice to meet a female now and then. The church has suffered much from fire, flood, time and restorers, but is imposing in its hugeness and most picturesque with its many jumbled roofs and crooked tower, while its cool green glass windows are the delight of a summer day. The church library is deservedly famous. Not only for the picture it gives of a monkish reading-room of long ago, but for its sprightly legends. Its rows of dark reading desks and benches are chipped and hacked as if by mischievous school boys rather than studious men. One does not wonder that the books were chained. They were rare and precious things five centuries ago, and if they seem a bit heavy for the thief, there were ways of smuggling under cloaks—a man did not balk at weight in those stout days. The rarer books illuminated in color and gold are, today, shut in glass cases, but a sufficient number remain upon the desks, more than you will read although you may sit down and turn the pages if you will. Perhaps as your truant eyes roam over the brick floor they may notice some queer marks. They can tell a better story than any you will find in the books. Zutphen has written several tales concerning these footprints and at least one poem. Practical minds—those that insist upon slow even slopes for dikes—insist that the builder's dog trotted in after his master upon the soft, unburnt clay, but everybody else knows that the devil himself came in a wolf's skin, to see what the monks might be doing there, for he loved neither books nor book makers. Or perhaps—perhaps—why were those books chained?—perhaps to claim his own among those who sat sedately upon the long benches and slowly turned the broad leaves.

Zutphen has very beautiful bells in her Wijnhuistoren, but in the vaults below no rich Rhine wines are stored today, no city magnates gather nightly there to exchange stories—or plan municipal improvements—over hugh goblets of grape juice. The name is a dry deceiver. City weighhouse, police bureau, museum of antiquities, the tower has become; a few goblets—goblets such as Franz Hals loved to paint—are there still, but carefully ticketed in the museum's cases and empty as is the Wijnhuis' name.

Another delightful tower stands among the trees of the Singel—Zutphen's water girdle, once her moat. An old city gate in 1444, the Saltpoort, it later became a citadel—the Engelburg—but in 1511, when a certain Drogenap was chosen as city musician, he took up his residence in the gate and by his name it is known to this day—the Drogenaptoren. Since his time it has been a prison and a warehouse, but at present serves the city as a reservoir.

FROM WITHOUT THE GATE IS EVEN MORE DRAMATICALLY PICTURESQUE

Its usefulness does not impair its picturesqueness—there is nothing prettier of a summer morning than the tower's proud lift above the tree-tops as it peers at its reflection in the moat. Below it is a stretch of grass with linens bleaching, a clump of roses, a pretty, blue-gowned girl polishing a brass kettle in the stream; beyond it the old wall stretches, pierced with windows, topped with chimneys, draped with vines, every portion serving as a house or a support for one.

We have a peculiar love for the Drogenaptoren. It is our consolation for a disappointment. In another town, whose name I may not mention, we were strongly recommended by a Dutch friend, who thought he spoke English, to see the "Straining Tower." We expected something like that at Pisa, I think. In a land where most towers lean more than a trifle the expectation was not unreasonable. We spent a precious afternoon in finding it. It was the city's filtering plant.

Even more picturesque than the Drogenaptoren is the old water-gate spanning the Berkel. Seen from within it is the only possible background for the jumble of flower-decked balconies, overhanging gardens, shaky bow-windows, rickety landings, slippery steps and crumbling walls with which Zutphen fringes the tiny river that runs through the town on its way to the Ijssel. Gay with color, quaint in line, quivering in soft reflection upon water where tiny boats pass unceasingly, backed by the dull-red turrets and arches of the gate and the green of the land beyond, the picture is as lovely as anything Dordrecht offers. No architect could approve the buildings and no artist would quarrel with them—yet curiously none come here.

From without the gate is, in its concealments, even more dramatically picturesque. One expects it to dissolve to soft music and disclose some fair damsel bending from a balcony or the Knight of the Swan sailing slowly down to a trysting place at the front of the stage. I never heard that Lohengrin included Zutphen in his itinerary of Rhine ports; it is a little off his track, which is noticeably the "beaten trail," but he would have found quite a suitable stage-setting ready there.

There are other enticing corners of Zutphen, quaint houses to see, war stories to hear; there are boats unloading peat and timber on Zutphen quays, prosaic

THE YOUNGEST MEMBER OF THE CREW WHOSE HOME IS THE RIVER BARGE

commodities that gain a certain picturesqueness from the liquid light, the idle hour—there are things yet to be done, to be learned, to be remembered and we would gladly linger, but may not; let us go on then to Deventer before the spell grows too strong for our breaking.

Deventer we never loved as we did Zutphen. Why, I do not know; does one ever know the secret of liking? It is a prosperous, attractive city, spotlessly clean, as befits a Dutch town. It is ancient. It claims anywhere from twelve to sixteen centuries and hints at more. It has its tall church tower and chime, its quaint houses, its Waag, its Stadhuis, its maze of winding streets, all the equipment of a charming town. In point of war memories and stories it is second to none. Its "koek" is famous over the Netherlands. I think that is the source of my indifference to Deventer. Every well-provided Dutch town has an especial "sweetie," and Deventerkoek, a sort of gingerbread made with honey, was not what I had expected of it. The fault is in me; the chorus of its praises admits no other discordant note. I like Deventer stories far better; less sweet, and spicier. One must have floated down with the Rhine water; it recalls Bishop Hatto—with a difference.

Once upon a time long ago (there was famine in the thirteenth, fourteenth or fifteenth centuries and the time is one of these, but why be specific?) there lived in a certain house upon Deventer's "Brink," which you may see to this day, a miser who used all his gold to corner the grain market. (The translation is *not* literal.) His cellars were soon filled to overflowing, and when dearth and hunger began to rule the miser's prices waxed higher and higher. Now in our day he would have become a multi-millionaire; not so in those mediæval ages that we call so rude. Avengers of the poor and hungry came, the corn-merchant's enemies, the rats—but—and here is the delightful part of the tale—they ate neither the corn nor the miser. They rolled themselves round and about in grainsacks and flour-bins, they sped to the harbor and into a convenient ship they shook from their fur all the burden of corn it could carry; in a trice they were back to repeat the trick. In no time at all the ship, filled to the water's edge, sailed away; the avaricious old man died of starvation in his empty cellar! Look well at these tiles in the house front, for they recall the story. Two represent rats and the third a meal-sack. The gevelsteen (gable-stone) once bore the Israelites crossing the Red Sea, but time and weather have smoothed out waves and wanderers alike; moreover they had no least thing to do with the miser.

The tale of Charles of Gueldres and his two block houses, which he poetically called the Morning and Evening Star, but which the Deventrians promptly dubbed Kijk-in-de-Pot (Peep in the pot) and Al-te-na (all too near) is also good, but too long for this page. That stone star upon the old Waag refers to it and the old copper kettle hard by has a gruesome history; the bridge of boats across the Ijssel recalls an ancient compact made good by fire and blood. In the Berg Kerk —Mountain Church—but the "mountain" is but a few feet high—lies buried a very puzzling Eleanor of England, whom all writers mention and none define. In these stones, these picturesque gables, these historical puzzles, there is much to keep one at Deventer, yet we did not linger. The bells were chiming the Pilgrims' Chorus as we went away toward Kampen. We found it beautiful and appropriate.

In passing, one *must* stop at Zwolle, although it lies upon the Zwarte Water, not the Ijssel, and apparently can have

nothing of the Rhine. Ringed with water and smooth green banks, tree-planted, adorned with towers, with its beautiful Sassenpoort, hallowed by the memory of Thomas à Kempis, strong in its martial stories, gay at our visit with all the fun of Kermis, who could pass it by?

But if Zwolle is charming, what shall one say of Kampen? Where find adjectives to express its loveliness by sunlit day or moonlit night? It is the habit of Amsterdam—which lies just across the Zuider Zee—to poke fun at the Kampeners. "Simple Simon" would be quite at home there, they say, or words in Dutch like to it, and Zwolle tells a tale or two to prove it. We are privately certain that Zwolle is jealous of Kampen. "Pouf!" says Zwolle, "you are cross because we did not make a fuss over you, like Kampen did." It's true, Zwolle was very indifferent to strangers and Kampen most cordial; we admire Zwolle but we love Kampen; one is an acquaintance, the other a friend. But listen to the stories.

"The grass once grew upon Kampen's tall town-tower," says Zwolle, "so the wise burghers hauled up a cow to eat it up. Now a Dutch cow being used to very flat meadows, not steep hillsides, could not keep its footing and fell to its death, whereat Kampen professed great amazement. The grass continues to flourish." The story has a familiar ring. You will hear it again and maybe again before our voyage is done.

Another story concerns revenues. Each gate earned a certain sum in tolls. "Let us double the number of gates," counseled a "city father," "and then we shall have twice as much money!"

Kampen, like every other Netherlands town, has suffered severely from fires and more than once found that her fire apparatus would not work at the right moment. "The night before every fire we must have drills and see that the squirts are all in good order," gravely resolved the Town Council. It is to such stories that Kampen is indebted for the smiles that greet her name. But say Blauwevingers —Bluefingers—in Zwolle and see what happens!

Henri Havard relates that she sold her best chimes to the Westerkerk in Amsterdam and was paid in copper coins so small that her councillors' fingers grew

FLOWER-DECKED BALCONIES LINE MANY A DUTCH STREAM AND ENHANCE THE CHARM OF THE WATER ENVIRONMENT

blue in the counting of them, whence the name they have to this day.

Zwolle says he is all wrong. Her Sassenpoort—from which he borrowed the bells —never had any. She never sold a carillon to Amsterdam. She never had blue-fingered men. She waxes very wroth but—she swallows her wrath for business purposes. She advertises "Blauwevingers" as her local sweetmeat, sugars the pill as it were and still counts the coins. And the Westerkerk at Amsterdam certainly has a beautiful set of bells.

Kampen does not scold, as Zwolle does, over her stories; she ignores them. She sits calmly by the Ijssel ringed by broad canals. Her great Koornmarktspoort—the Gate of the Grain Market—still white as when it served as a landmark for sailors, looks out over her broad quay and back over the town in strength and dignity. Upon the land side two other charming gates peer through the trees which have replaced her old walls into a moat given over to water fowl, to aquatic plants—a cool, green, delightful place upon a summer day.

Within the town are a great church or two and a charming Stadhuis whose like is not elsewhere in the Netherlands. Built in 1350, the interior has suffered much by fire; nevertheless the old "vierschaar" or judgment hall of the sixteenth century is today the most perfect room of its kind in the Kingdom. Here Kam-

THE SASSENPOORT, ZWOLLE, FROM ACROSS THE MOAT

THE PEISTERPOORTGE, AND ALL THAT REMAINS OF ZWOLLE'S OLD WALLS

THE RHINE STEALING TO SEA

BENEATH LEIDEN'S BRIDGES THERE FLOWS A SLOW-MOVING STREAM—ITS NEIGHBORS CALL IT THE RIJN

pen's antiquities are enshrined, a few bits of silver, the "moffenbeker" or fool's cup (although fool is too harsh a translation of the Dutch "mof"—a clown or boor—a word more like our own school boy's "Muff"), stone cannon balls, illuminated books, copper squirts said to have been used in subduing rebellious citizens by a judicious shower of boiling oil. Alas, for picturesqueness! A Dutch friend says they were merely old fashioned fire-extinguishers! Why not watering pots? Boiling oil has such a nice "shuddery" sound at the safe distance of four or five hundred years. Why spoil the story?

If matter-of-fact commentators can spoil Kampen stories, they cannot mar Kampen streets and quays. One should certainly be there for at least one Sunday, or perhaps, Kermis. Then the farmers of Kamper-Eiland come in with wives and daughters for service or for merry-making. There is much quaint costume, a thronging of picturesque high-wheeled carts and brown-sailed boats by the quays. When Schokland, a Zuider Zee island, was declared unsafe, the bulk of its population removed to Brunnepe near Kampen and they, the fishermen of Urk and of Marken and Volendam, baggy of trousers, gay of shirt, are daily seen in Kampen markets.

A MARKEN FISHERMAN

Red-sailed boats rock in its inner harbors, tarry nets hang drying in the sun; beyond stretch rich green meadows, cattle-dotted, behind rise roofs and towers of the quaint old town.

There are comfortable little hotels in Kampen, there are breezes from hay-scented meadows or from the salt sea. There is a beautiful river at one's door, where boats rock invitingly, there are islands to visit, streets to explore, the prettiest of little parks for idle hours, a long roll of history for one's studious days; almost we forgot in the pleasant little city past which a slender branch of a branch ultimately reaches the sea, that we meant to follow the great and justly famous Rhine stream not to its one goal, but its many.

So, reluctantly, we turned from sunny, friendly Kampen to stately Arnhem, there to take again the northern branch of the Rhine where we had left it for Drusus' canal.

EDITOR'S NOTE:—This is the second article on foreign waterways, by Mrs. Albrecht. The third will appear in the May issue. The subject will remain the "Dutch Rhine" and the text will be profusely illustrated with the art photographs of Mr. Emil Poole Albrecht.

THE TWIN TEXAS WATERWAYS

By ALBERT SIDNEY BURLESON, *M. C.*

"WHEN Texas is compelled to buy corn or wheat from these grain states (Kansas and Nebraska), she is compelled to pay Liverpool prices to get it." There's "food for thought" in this truth driven home by Representative Burleson, of Texas, than whom there is no better posted student of present-day economic and industrial conditions in the Lone Star State, with their crying need for bigger and broader channels of commerce in the form of internal waterways.

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TO realize for the prodigally rich Texas coastal plain watered by the Brazos and Trinity Rivers an era of prosperity rivalling that which followed the discovery of petroleum at Beaumont and the recovery of sulphur in Calcasieu, just across the Louisiana boundary from Beaumont, the people and the industrial and commercial interests of Texas are importuning the National Government for federal aid to advance the improvement of the two waterways named. Ere the career of Port Sabine as a shipping center shall have fully dawned, yet another and greater port, known as Bryant Heights, or Freeport, located but a few score miles to westward on the Gulf shore, will send forth its ships to every quarter of the globe. Prominent New York financiers are actively behind the latest plan to rank the Texas seaboard among the great shipping areas of the national coastline. So may be gained for Texas, in relation to the maritime traffic which will surge through Panama, the place that was held by Venice in relation to the commerce of the Mediterranean in the Middle Ages.

The Brazos and Trinity Rivers rise in the northern and northwestern parts of the State, and meander nearly due south through one of the largest and most fertile single bodies of rich agricultural land in the nation. The area drained by these twin streams produces annually one-fifth of the great cotton yield of the United States, besides cereals and other crops, with almost an equal per acre average with the States which produce those commodities alone. When it is considered that only about twenty per cent. of this land is actually under cultivation, the most optimistic will be unable to overestimate the future of this famous section.

There were forty-four different boats with a tonnage ranging from 65 to 480 that were engaged in the Trinity River trade, and 28 with the same average tonnage on the Brazos, in the years from 1867 to 1878. These boats, during favorable seasons and stages of water, made trips up the Trinity to within sixty miles of Dallas, and, on the Brazos, to within fifty miles of Waco.

The improvement of the Trinity from Dallas to the Gulf and the Brazos from Waco to the Gulf, is the only constitutional, national and safe solution of the problem of excessive freight rates with which the people of Texas are now confronted. The improvements will furnish the cheapest possible transportation, and will make the rivers the most efficient regulators of railway freight rates in all the territory contiguous and tributary to them.

The Brazos and Trinity Rivers run through the most fertile sections of the State, with a never-failing season for all kinds of crops. The rivers, on both sides, invariably form county boundaries. There are fourteen counties along the Trinity with a combined population, in 1910, of 464,834. They have an area of 9,021,160 acres, of which about 2,595,683 acres are under cultivation. The 1,166,398 acres planted to cotton produced in 1911. 577,664 bales of 500 pounds each. The remaining 1,429,285 acres, planted to corn,

wheat, oats and other crops, show only about 28 per cent. to be under cultivation.

There are twelve counties along the Brazos River, with a combined population of 318,809, in 1910, having a total area of 6,376,320 acres, of which 2,315,411 acres were under cultivation; 1,072,538 acres were in cotton, producing 547,921 bales, and the remaining 1,242,873 acres were planted in various crops, as on the Trinity River, with sugar and rice in addition, but with only about 36 per cent. of the total area actually cultivated.

There are annually produced in the fourteen counties along the Trinity and Brazos 1,125,585 bales of cotton, as against the total of 1,223,899 bales produced in the 117 counties of both Arkansas and Louisiana, and the total of 1,124,601 bales raised in the forty-two counties along the banks of 1247 miles of the navigable rivers of Alabama; or as against the production of 1,203,545 bales in the seventy-two counties of the great cotton growing State of Mississippi, or the production of 1,075,826 bales in the seventy-one counties of North Carolina.

On account of the almost continuous stretch of overflow bottoms in the Mississippi basin, between New Orleans and St. Louis, few towns could locate along the banks of that great waterway in the interval named. The opposite is the case when the Brazos and Trinity Rivers are considered. These streams are favored with high lands that are above overflow on one side or the other, every few miles, from the proposed heads of navigation—respectively Dallas and Waco—to their mouths. Thus the towns that will locate on these points above overflow will furnish a large local traffic, equal to or exceeding that handled by the boats navigating the Upper Ohio and its tributaries, and as soon as the Trinity and the Brazos Rivers are opened to continuous navigation a vast population will flow into these sections, there to find homes and prosperity.

Besides the agricultural resources there are outcroppings of brown or lignite coal on the banks of both rivers. On the Trinity it is found in more than twenty places from 125 miles below Dallas to Riverside, covering a distance of two hundred miles, in layers or veins of from two to twelve feet in thickness. On the Brazos, about one hundred miles below Waco, a vein eight feet in thickness is exposed for more than half a mile. The width of the lignite belt on the Brazos extends for more than eighty miles.

By a patented process, of great economic value, both gas and ammonia are recovered from the Texas lignite, while ammonium sulphate, a by-product, is rapidly finding a market throughout the Southern States as a standard fertilizer. The slack from the lignite mine operations, hitherto regarded as waste, is now industrially exploited to an extent sufficient to warrant the statement that Dallas and surrounding cities will have the benefit of producer gas converted into electricity which will be transmitted over high potential wires and delivered over the city at a rate of from 18 to 20 cents per kilowatt hour, where now 75 cents per kilowatt hour is paid. Natural gas, to successfully compete, will have to sell at 15 to 25 cents.

The average export freight rate from the great grain-growing States of Kansas and Nebraska, via Galveston, to foreign markets is 19 cents per 100 pounds, or 10.6 cents per bushel on corn, and 11.4 cents per bushel on wheat.

While doubtless it is true that only a slight per cent. of the crops raised by these States seeks the markets of the world by way of Galveston, yet the producers in those States have received the great advantages of a competitive water route to the Atlantic seaboard and to the markets of the world. Not only have the rates out of those States been reduced, but by reason thereof the producers of these crops have received an increased price for their commodities, which increase amounts on the average to 5 cents per bushel, both on wheat and on corn, aggregating more than $20,000,000 per annum. The amounts saved and realized annually by the farmers and producers of the States of Kansas and Nebraska on their grain crops, and by cheap freight rates on other commodities bought, sold and used by them, more than double annually all the sums appropriated and expended for the improvement of the harbors of Galveston and Sabine Pass.

Not only have the producers of the States named been immeasurably benefited, but the consumers in the great cities and the lake ports and the entire inland population of the Eastern States

A BARGE-LOAD OF TRINITY AND BRAZOS RIVER IMPROVEMENT ADVOCATES. COL. W. S. DUNCAN, OF DALLAS, ON BRIDGE

and of the Atlantic Coast cities have profited fully $40,000,000 annually on account of the cheaper transportation forced by the competition of the Galveston port.

For several years the freight rates on wheat from Duluth, Minnesota; Milwaukee, Wisconsin, and Chicago, Illinois, to New York and other Atlantic ports by lake-and-canal and by lake-and-rail, a distance varying from 1000 to 1500 miles, were from 5 to 7½ cents per bushel for wheat and 4½ to 5¾ cents per bushel for corn.

The rate charged on corn, when it is transported over one line or system of railroad, from any point in common-point territory to Galveston, is 8.4 cents per bushel; when transported over two or more lines of railroad, or systems, it is 9.8 cents per bushel. On wheat, the rate when transported over a single line is 9 cents per bushel; if transported over two or more lines it is 10½ cents per bushel.

It will thus be seen that in Texas, for a distance of from 190 to 400 miles from Galveston, or an average distance of about 300 miles, the rate on grain is almost as high as it is from Kansas and Nebraska to Galveston, and it is also higher than the rate charged from lake points to Atlantic ports. The rate on grain from Kansas points to Texas common-point territory is 30½ cents per 100 pounds, or 18.3 cents per bushel on wheat and 17 cents per bushel on corn. It has been, and sometimes still is, the case that Texas is compelled to buy corn or wheat from these grain States, and when she does she is compelled to pay the Liverpool price to get it. The rate to Galveston is 23 cents per 100 pounds, or 13.8 cents per bushel on wheat, and 12.8 cents per bushel on corn.

The great saving which must accrue to the people of Texas when these rivers have been improved for continuous navigation is indicated in a report made by Assistant U. S. Engineer Watt after he had spent a full year in an investigation of the advisability and practicability of improving the

Trinity River. Mr. Watt estimated that $1.00 per bale on cotton and $4.00 per ton on general merchandise would be a reasonable rate by river from Dallas to Galveston, and that this rate would allow the boat owner a profit of about 50 per cent. annually above expenses and interest on his investment.

There were ginned and marketed in Texas for the year 1902, 2,475,881 bales of cotton, and Mr. Watt estimated that the Trinity River zone would affect the rate on 1,247,773 bales and that the saving over the ruling freight rate would be as follows:

164,990	bales	at	an	average	of	$1.50,	$ 247,485
410,202	"	"	"	"	"	.50,	205,101
359,554	"	"	"	"	"	2.00,	719,108
312,987	"	"	"	"	"	1.00,	312,987
1,247,773	"	"	"	"	"	1.19.	$1,484,681

It is believed that the Brazos River zone would have affected the rate on at least 850,000 bales on the same general averages, with a saving of $1,071,500, or a total for the two rivers of $2,556,181.

As the crop of 1911 was nearly double that of 1902, a conservative estimate shows a saving for the latter year of at least $3,000,000. It is estimated that the cotton crop furnishes about one-fifth of the entire tonnage of the State; therefore the saving in freight rates in the zones affected by the two rivers would have amounted, in 1911, to fully $5,000,000.

The reader will gain a better understanding of the freight rate situation in Texas from a statement of the conditions which prevailed in 1872, while there was steamboat competition and prior to the Interstate Commerce Law and the formation of the State Commission.

The Houston & Texas Central Railroad was completed to Dallas in July, 1872, a distance of 265 miles from Houston, and to McKinney, 31 miles north of Dallas, in the same year. On September 1, 1872, that railroad issued a freight rate sheet establishing the rate on cotton from Corsicana, 54 miles south of Dallas and 211 miles north of Houston, and the other stations named, to Houston, as follows:

Corsicana to Houston, 83 cents per bale.
Rice to Houston, 88 cents per bale.
Ennis to Houston, 93 cents per bale.
Hutchins to Houston, $1.03 per bale.
Dallas to Houston, $1.05 per bale.
McKinney to Houston, $1.20 per bale.

The present rate to Houston from all these points is 45 cents per 100 pounds, or $2.25 per 500-pound bale.

The rate on cotton from Houston to Galveston on September 1, 1872, was 60 cents per bale, net, which made the rate from the above points to Galveston as follows:

From Corsicana, $1.43 per bale.
From Rice, $1.48 per bale.
From Ennis, $1.53 per bale.
From Hutchins, $1.63 per bale.
From Dallas, $1.65 per bale.
From McKinney, $1.80 per bale.

The present rate on cotton from Houston to Galveston is 30 cents per bale. The present rate to Galveston from all points above named is $2.55 per bale.

On September 1, 1872, the ocean rate on cotton from Galveston to New York by steamer was $4.59 per bale, in gold, and by sail $2.65, in gold. The present rate from Galveston to New York is 36 cents per 100 pounds, or $1.80 per bale.

The present rate by rail from the points named above to New York is $4.05 per bale, as against $4.30 per bale from Dallas to New York, September 1, 1872, by rail-and-sail, and from Corsicana to New York, $4.18.

The through rate on general merchandise by rail-and-sail on September 1, 1872, was 42½ cents per 100 pounds New York to Galveston, 22½ cents per 100 pounds Galveston to Houston, and $1.33 per 100 pounds Houston to Dallas; a total of $1.98 per 100 pounds, as against $1.72 per 100 pounds by ship-and-rail at present, a reduction of only about 13 per cent.

The reason for the excessive freight charges between Galveston and New York at that time was the cost of lighterage from the ships at deep water, about seven miles from Galveston, to the wharves at Galveston. The cost on cotton was $1.00 per bale. It will be remembered that no improvement had been made on the Galveston channel and harbor up to that time, and the water over the bar was very shallow.

At the time of issue of the foregoing freight rate tariff, September 1, 1872, the Trinity River was regularly navigated as far up as Porter's Bluff, about 18 miles east of Corsicana. There were many obstructions in the river, and its natural

SCENE AT LOCK AND DAM NO. 1, THIRTEEN MILES BELOW DALLAS
SHOWING IMPROVEMENT EFFECTED IN NAVIGATION OF BRAZOS RIVER

condition did not permit such a degree of navigation as might expect to compete with railroad transportation. The low rates at which the railroads carried cotton —*i. e.*, 83 cents from Corsicana to Houston—destroyed steamboat competition at that time.

It will be observed that the railroad extended its line through that portion of the State, first northwestwardly to Hempstead, 50 miles from Houston, and within 4 miles of the Brazos River, and then continued within 4 to 6 miles of that stream, to Bremond, opposite the falls on the Brazos, 100 miles below Waco, and 143 miles from Houston. It then turned its line northeast to the then head of navigation on the Trinity, Porter's Bluff, 18 miles from Corsicana. So, by the cheapened freight rates and the quicker transportation, the Houston & Texas Central Railroad took away the steamboat traffic on both the Brazos and the Trinity Rivers. Boats however, continued to run for two or three years afterwards, but the conditions on both the Trinity and Brazos Rivers—neither of them having been improved—were such that on neither could boats profitably compete with the railroads, especially when they were forced to carry commodities at such low rates of freight. The following tables illustrate the contrast in railway rates prevailing for the transportation of general merchandise:

To New Orleans, from Shreveport, a distance, by rail, of 323 miles, and by river, of more than 600 miles:

CLASSES IN CENTS PER 100 POUNDS

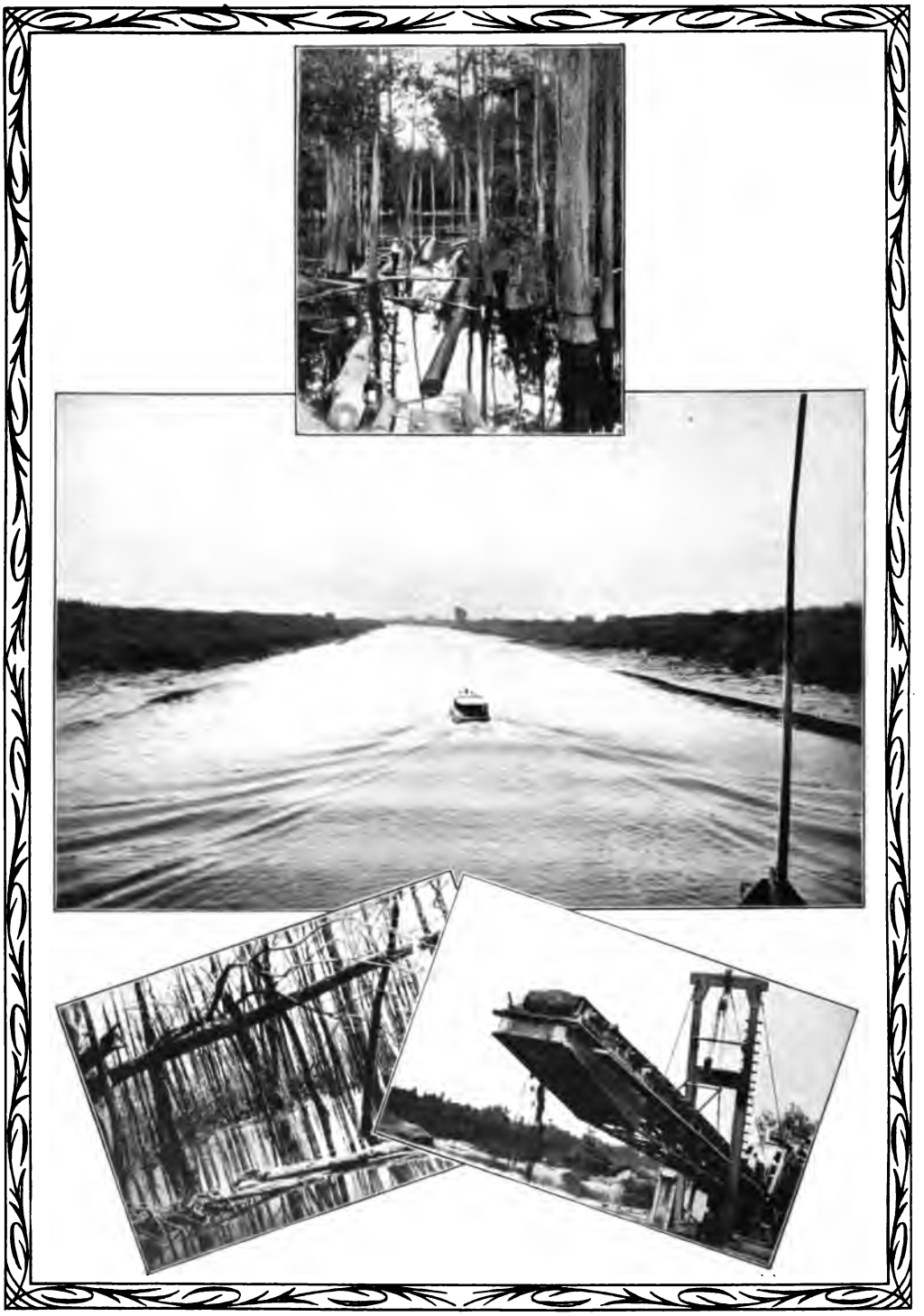
LESS THAN CARLOADS					CARLOADS				
1st Class	2nd Class	3rd Class	4th Class	5th Class	Class A	Class B	Class C	Class D	Class E
.60	.50	.40	.30	.22	.25	.20	.17	.16	.15

To interior Texas (common rate) points *not accessible* by water transportation, from Galveston:

CLASSES IN CENTS PER 100 POUNDS

LESS THAN CARLOADS					CARLOADS				
1st Class	2nd Class	3rd Class	4th Class	5th Class	Class A	Class B	Class C	Class D	Class E
.87	.78	.65	.61	.47	.49	.43	.36	.25	.19

It goes without saying that when the steamboats ceased to run the freight rates were greatly raised and that they have continued excessive ever since.



LOGGING ON THE OCMULGEE (TOP)
THE STOCKTON (CAL.) SLOUGH STRAIGHTENED AND DEEPENED BY DREDGING (CENTRAL). DRAINAGE NEEDED HERE (LEFT)
TYPE OF GOVERNMENT DREDGE USED TO RECLAIM SWAMP AREAS

DRAINAGE CANALS FOR NAVIGATION

By M. O. LEIGHTON

"WITH drowned America drained, rivalry between railroads and waterways will be prevented by a surfeit of traffic on both." The development of swamp waterways for the traffic of wide areas of contiguous territory is a logical part of the principle of reclamation of the low, marshy wastes of the country, declares Mr. Leighton, who is Chief Hydrographer of the U. S. Geological Survey. Drainage canals are utilized for the movement of farm produce in Holland and in our own Louisiana.

FEW men agree in all things that concern this waterways business. One will not go far wrong if he accepts this disagreement as positive proof that the cause is of consequence and worthy of profound consideration. Great men have no disputes concerning things of no consequence. In that disagreement lies ultimate safety; out of that disagreement comes the final satisfaction of all varied interests. There is, however, a certain harmful tendency in the championship of issues that surround a great public question. Men become so busy in contending for certain details that they habitually forget others, concerning which there can be no argument, and out of which there may come just that concert of good feeling that would direct all minds into close harmony. So it is that a reminder of obvious things usually strengthens a cause already strong. This article will therefore remind waterways advocates of a line of argument that may render good service.

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Swamp drainage is an idle fallacy unless it be tied hand and foot with transportation. The business of transportation has, on the other hand, no greater field of development than in the swamp and overflow lands of the United States. So thoroughly mutual is every necessity of both that their identity is well-nigh merged. The most distressing sight in all the industrial world is that of the farmer with a big crop in his field, a profitable market in the distance and no adequate or reasonably cheap transportation between the one and the other.

Perhaps we may call the railroad the lion of transportation. If so, we may reasonably call the inland waterway the lamb. In the drained swamp land they will abide peacefully together and there is no situation in commerce in which they will be of so great mutual benefit. For the railroad is the agent by which the crops, especially the perishable ones, may be quickly transported to a distant market, while the waterway will be the useful means of local collection of these commodities for delivery at a railroad shipping point. For the bulkier and less perishable products the waterway and the railroad will serve according as either is permanently, or, for the time being, the best fitted. With drowned America drained, rivalry between railroads and waterways will be prevented by a surfeit of traffic on both. Why is this so?

The waterways of the swamp-land country will always traverse the centers of production. With natural waterways this is not always the case. A river has a relatively fixed location and must generally be improved for navigation along its natural course, however tortuous or inconvenient. While it is true that many industries will naturally move toward well-improved navigable rivers, it is equally true that the majority of them must be fixed as to location by other considerations. It would probably be of advantage if the improved Ohio River would take its course through the coal regions of Indiana and Illinois, but it will not. Some profit might accrue if the furniture mills

[illegible] would [illegible] the [illegible] [illegible] [illegible]

lands is merely an extension of river steamboat traffic along the great canals of the larger drainage systems. Of course, this will be limited in its scope to those canals that are by drainage necessities made sufficiently large for the purpose.

Under the conditions above briefly sketched is it not clear that inland water navigation will eventually find its most favorable field in the swamp regions of the country? Has it not always been of

The close relationship between drainage and waterways improvements has been officially recognized in a bill introduced into the Senate of the United States by Senator Williams of Mississippi. This bill provides for national drainage under conditions and methods which require no explanation here. The section of present importance is that which provides that in case any canal system to be excavated under the supervision of the Federal

JERICHO DITCH, DISMAL SWAMP, VA.
TREES OF SECOND GROWTH ON LEFT—CANEBRAKE FOLIAGE ON RIGHT

tactical business advantage to be able to legitimately charge off a large part of the construction and maintenance costs of a given commercial project against another project in which those charges are a natural consequence? Supposing such a thing were possible in the proposed schemes of improvement of the Ohio or Mississippi Rivers, or in any of the great waterways projects of the country! The need for a waterways propaganda would be very short-lived because the objects thereof would have been accomplished.

Government is sufficiently large or can, at reasonable cost, be made sufficiently large for navigation purposes, an examination and report thereon shall be made by, or under the direction of, the Chief of Engineers, U. S. Army. In case of favorable recommendation, the project becomes eligible for treatment by Congress as a navigation project under the same procedure that now prevails with respect to rivers and harbors, the Federal appropriations to consist of the additional expenditures required to increase the capacity of

WHY NOT A FUTURE CANAL INSTEAD OF THE EXISTING APOLOGY FOR A HIGHWAY?

the proposed drainage for navigation purposes.

We have noted the fact that the transportation field, by rail and water under swamp-land drainage, promises enough to satisfy even the most greedy propagandist, wherever in the realm of traffic his interests may lie. It will be of final interest here to conservatively estimate what may be the value of produce that will be subject to transportation in the day when our swamp lands receive recognition. We will confine this estimate to those regions in which water transportation is likely to be an important feature.

Leaving out of consideration the States in which the swamp lands are scattered in relatively small parcels, and including only those regions in which the swamps are so extensive and continuous as to require large canal systems, suitable for navigation, the total area is in round numbers 55,000,000 acres. Allowing 20 per cent. of this for uncultivated area occupied by buildings, towns, canal surfaces, etc., there is left a net area of 44,000,000 acres, which in the day of complete swamp reclamation will be subject directly to water transportation service as above described. Swamp land which under drainage and cultivation will not produce a marketable yield of $40 per acre is exceedingly rare and poor stuff. The transportation business may therefore look forward to an ultimate annual traffic in farm products equivalent to about $1,760,000,000, in addition to the enormous quantity of supplies and equipment which must annually be transported into these regions.

It does not take much imagination to see that the inward bound tonnage will be large. The factory is ever following close to the source of supply. The enormous production of which these reclaimed lands are capable will offer the incentive and be the foundation of varied manufacturing industries. This is especially true since the potential wealth of this acreage will be in reach of the cheapest of transportation—water transportation via the drainage ditch. All this means population—another word for transportation business.

Some say that the inward bound tonnage will equal that outward bound. However this may be, even the most conservative interpretation will show so gigantic a transportation industry that there can be no question concerning the importance of the field.

THE APPARATUS THAT CLEARS THE WAY

TYPE OF U. S. ARMY ENGINEER CONVEYER CHANNEL DREDGE EMPLOYED IN SWAMP DRAINAGE OPERATIONS

EARLY HISTORY OF THE ERIE CANAL

By GEORGE CLINTON, JR.

"THE fleet which had made the trip and a large number of other vessels proceeded to a point off Sandy Hook. The Governor then completed the ceremony of 'commingling the waters of the lake with the ocean' by pouring the contents of one of the kegs into the sea." Such is the keynote of Mr. Clinton's article, which continues his series begun in the initial issue of this magazine, wherein he treated the preliminary constructive period of that great artificial waterway, to which New York owes much of her supremacy.

III. THE CONSTRUCTION PERIOD

IT is difficult for us at the present day to realize the conditions under which the work was prosecuted. In those days there were no contractors for public work, no special appliances for excavating, the country was thinly populated, transportation was difficult, weather unfavorable, labor hard to procure and those who undertook the contracts had no large resources of capital. There was, however, no lack of enthusiasm, and under all the handicaps referred to little difficulty was found to obtain men who were willing to undertake the contracts. The work was subdivided into small sections so that no contract would be too large for a single contractor to handle, advances of money were made to the contractors by the State and assistance given in other ways to enable them to accomplish their several undertakings.

Various devices were resorted to to lighten the labors of the contractors and special tools were invented to aid in excavation, so that the work of construction steadily progressed in spite of the difficulties under which the contractors labored. Not only were the natural difficulties great, but the lack of engineers having a practical acquaintance with canal construction was a serious handicap.

Efforts were made to obtain the services of foreign engineers, but without success, and the surveyors employed by the Commission were compelled to educate themselves to the work. Among those who made their reputations and displayed high ability in this branch, James Geddes and Canvass White should be particularly mentioned. In fact, it is due to their services and untiring efforts that construction became possible at all.

It is interesting to note here that while the work was going on the waterproof cement, which has become the subject of a large industry in this State, was discovered by a Doctor Barto and its use developed and made practical by Canvass White. Before this discovery it had been proposed to import from Europe waterproof cement for use on the canal.

Work on the middle section advanced so satisfactorily that in 1819 the Legislature authorized the commencement of work on the eastern and western sections, and this work was started and prosecuted under similar difficulties, but with like satisfactory progress. The middle section was completed in 1820 and its completion was the subject of a celebration at Syracuse on July 4th of that year, which attained proportions unusual for that period.

The commencement of work on the eastern section and the completion of work on the middle section involved interference with the work which had already been done by the Western Inland Lock Navigation Company, and as the commissioners had been unable to come to terms with that company for acquiring its rights, the Legislature enacted a law in 1817 providing for condemnation of them. Armed with this authority, the

... a mural painting in the New York Public Library, New York.

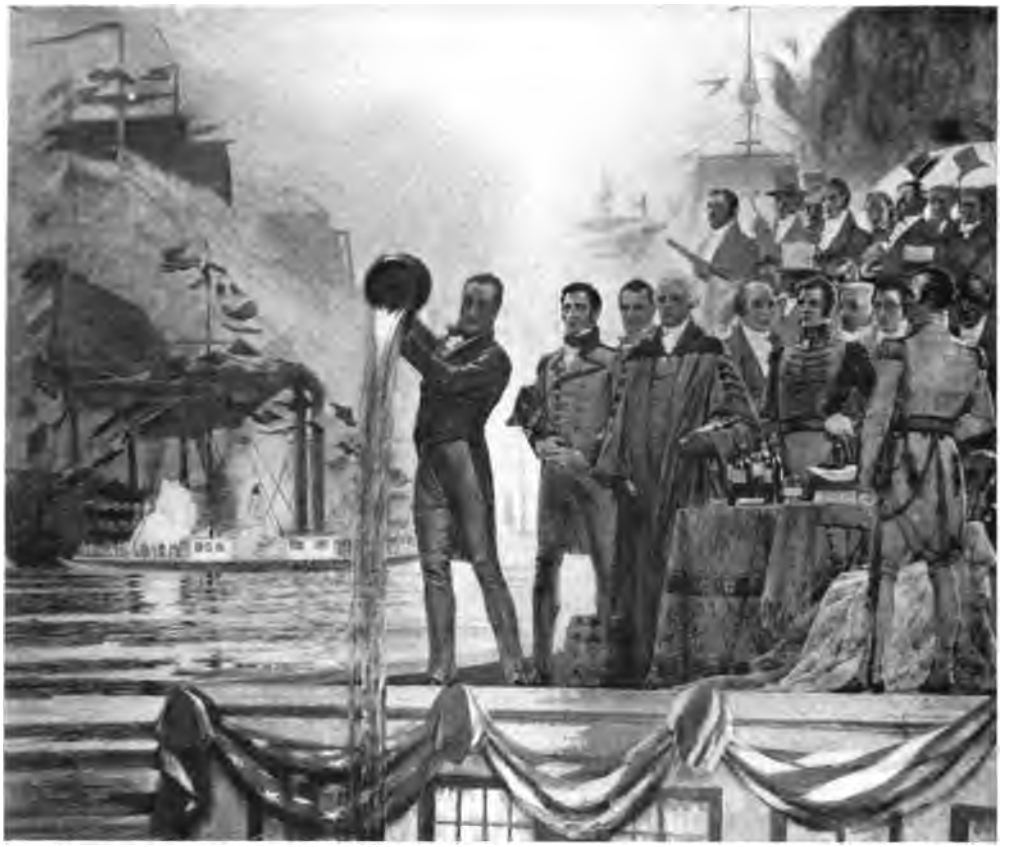
THE BEGINNING OF THE FIRST VOYAGE THROUGH THE NEW IMPROVED ERIE CANAL FROM THE LAKE TO THE ATLANTIC

commissioners were enabled to purchase the rights of the company in the canal, based on the provisions of the concession granted by the Khedive in 1854, thus putting an end to the company and vesting its properties in the State.

While the work was progressing portions of the canal which were completed were opened to traffic. Thus the middle section was opened in [illegible] and tolls were collected therein in that year and each year thereafter until they were finally abolished in [illegible].

In [illegible] the Ismailia River was connected with the Lake Timsah by a navigable [illegible] in order to permit of navigation communication from Ismailia to the Bitter Lakes. Among the [illegible] engineering tasks accomplished [illegible] the Ismailia Canal across the Serapeum [illegible] and the deep rock cutting at Chalouf, in the Nefisha section, and the double crossing of the Nefisha River by railroads in the same section.

It also became necessary to determine the western terminus of the canal, and a long controversy arose between the villages of Suez and Shat Kaa as to which should secure the privilege of being the terminus, the details of this controversy, which is interesting, but on account of the arguments advanced and from a historical standpoint. It must suffice to say that the village of Suez was finally successful in persuading the Commission to locate the terminus at Suez, at the mouth of which the village was situated. Shat Kaa, however, that Shat Kaa has in no way suffered from this decision, as it now forms a part of the extensive city which the village of Suez has become, largely by the instrumentality of the canal.



From a mural painting in the DeWitt Clinton High School, New York

"THE MARRIAGE OF THE WATERS." GOVERNOR CLINTON, OF NEW YORK, POURING WATER FROM LAKE ERIE INTO THE SEA

In 1823 the eastern section of the canal was completed, and this was followed, two years later, by the completion of the western section. As has already been stated, the original estimate of the cost of the canal by the commissioners was about six millions of dollars. The actual cost proved to be slightly over seven millions, the discrepancy being accounted for by unforeseen difficulties in the prosecution of the work, some slight changes in the route and the fact that labor and materials were found to be more expensive than had been anticipated. But it is creditable to those under whose direction the work was carried on that there has never been a suspicion of improper application of the funds expended, or of waste or extravagance.

As the time approached when the work would be finished, extensive preparations were made for a celebration of the event. October 26, 1825, was appointed as the date for the ceremonies. The Common Council of the City of New York took the matter in hand on behalf of that city, and every place of importance along the route prepared to participate in the celebration.

On the morning of October 26, a public demonstration of joy was made by the inhabitants of Buffalo upon the occasion of the departure of a fleet of boats which were to traverse the entire length of the canal and the Hudson to the City of New York. The fleet consisted of the *Seneca Chief*, the *Chief*, the *Superior*, the *Commodore Perry* and the *Buffalo*. DeWitt Clinton, at the time Governor of the State; the Lieutenant Governor, James Tallmadge, and committees from different villages and cities along the route, including New York and Buffalo, were on board.

At the moment of the commencement of the journey a cannon was fired at

Buffalo, giving the signal to a line of cannon within hearing distance of each other, extending the entire length of the canal and the Hudson, and the news of the opening of the canal was thus transmitted from Buffalo to New York in an hour and a half, and then returned to Buffalo in the same manner. Throughout the entire journey the arrival of the fleet at every principal place occasioned the greatest rejoicings; salutes were fired, fireworks displayed, speeches made and banquets and balls tendered to the officers and Committees. Upon arrival at Albany an entire day was devoted to the festivities appropriate to the occasion. The fleet then proceeded down the Hudson in tow of steamers to New York, where there took place a most elaborate celebration of the event.

Two kegs had been prepared containing water from Lake Erie, and these kegs were carried on the journey to New York. A naval procession was formed consisting of the fleet which had made the trip and a large number of other vessels appropriately decorated, and the whole proceeded to a point off Sandy Hook, where the vessels formed a circle. The Governor then proceeded to complete the ceremony of "commingling the waters of the lake with the ocean" by pouring the contents of one of the kegs into the sea. He then delivered the following short address:

"This solemnity, at this place, on the first arrival of vessels from Lake Erie, is intended to indicate and commemorate the navigable communication which has been accomplished between our Mediterranean Seas and the Atlantic Ocean, in about eight years, to the extent of more than four hundred and twenty-five miles, by the wisdom, public spirit, and energy of the people of the State of New York; and may the God of the Heavens and of the Earth smile most propitiously on this work, and render it subservient to the best interests of the human race."

Water from many of the most notable rivers of the different divisions of the world was then poured into the sea by Dr. Samuel L. Mitchell. The flotilla then returned to the City of New York where a grand procession had been marching and was assembled at the Battery to welcome it on its return. In the evening the city was brilliantly illuminated and a grand display of fireworks took place at the City Hall, accompanied by magnificent illumination of that building; on the following Monday a ball was given by the military companies of the city in honor of the event.

On the return to the western part of the State of those who had left their homes there to accompany the fleet to New York, a keg of water of the ocean was poured into the waters of Lake Erie with appropriate ceremonies, thus terminating the celebration.

Thus was concluded an enterprise which has proven of the greatest value to the State. For it is due to the Erie Canal that the course of commerce was diverted from the Canadian and southern routes so as to enrich this State and its citizens. And to the Erie Canal is due the extraordinary prosperity experienced not only by the State as a whole, but by the cities of Buffalo and New York in particular, for immediately upon its completion their commerce increased by leaps and bounds.

It remains for us to see how the canal was administered and improved during the years following its completion, with some discussion of the financial side of the question, until the larger policy was initiated which has resulted in the authorization of the barge canal now under construction. These administrative and economic questions, belonging, as they do, rather to the period of operation than that of construction, will be made the subject of the next paper.

NOTE—In preparing the foregoing paper the writer has made free use of "A Historical Review of Waterways and Canals in New York State," by Hon. Henry W. Hill; of the "History of the Canal System of the State of New York," by Noble C. Whitford, published in 1905 under authority of the State Engineer and Surveyor of the State of New York; of "Colden's Memoirs," published by direction of a committee of the Common Council of the City of New York on the occasion of the celebration of the completion of the Erie Canal; and of various other sources, and wishes to render acknowledgement of his indebtedness to them.

EDITOR'S NOTE:—The next installment of Mr. Clinton's "History of the Erie Canal" will appear in the May issue

ASSOUAN AND THE SPHINX

No more powerful a contrast is to be afforded the world over than that now represented in storied Egypt by the great Sphinx of Gizeh, symbol of the most ancient civilization, and the mighty Assouan Dam, symbol of the most modern civilization. How must the all-seeing, ever-silent Sphinx regard the wonderful engineering work that has arrested the waters of the Nile just below the First Cataract—and that, in damming the river of glorious history, has totally submerged the magnificent ruin of the Temple of Philæ! Yet Philæ is but yesterday in the reckoning of the Sphinx. The drowning of exquisitely beautiful Philæ she may forgive. But the harnessing of the River of the Pharaohs?

THE TURKISH PORT OF STAMBOUL
OPPOSITE IS SEEN PERA, CONSTANTINOPLE

A MOST REPRESENTATIVE GATHERING

FIRST ANNUAL BANQUET OF THE CHAMBER OF COMMERCE OF THE UNITED STATES

HELD IN WASHINGTON AND ATTENDED BY PROMINENT BUSINESS MEN FROM PRACTICALLY EVERY SECTION. MANY QUESTIONS OF NATIONAL IMPORTANCE WERE DISCUSSED, AMONG WHICH WAS THE FLOOD MENACE OF THE LOWER MISSISSIPPI VALLEY. MR. CALDWELL OF MEMPHIS IS BRIEFLY QUOTED BELOW

THE MISSISSIPPI DELTA

"Neglect by the United States Government of an area of alluvial territory in the lower Mississippi Valley, comprising 19,000,000 acres and almost equaling in its extent the combined area of the States of Massachusetts, Connecticut and New Jersey, has not only caused a wanton sacrifice of human life, but has rendered unproductive, or uncertain of production, the richest soil of the Republic." In these words, A. S. Caldwell, a prominent business man of Memphis, appealed for national aid in the conservation of the unlimited resources of the Mississippi bottom lands, in a speech delivered before the first annual meeting of the Chamber of Commerce of the United States, held recently in Washington. The notable group addressed by Mr. Caldwell appears in the above photograph.

"Did Congress hesitate to expend nearly $200,000,000 and several thousand American lives to take Cuba from Spain, and give it—not to us, but to somebody else?" Mr. Caldwell asked. The Delta needs only a fraction of this sum.

A. S. CALDWELL

PROMINENT MEMPHIS MAN MAKES A VIGOROUS APPEAL FOR FLOOD PREVENTION IN THE MISSISSIPPI VALLEY AND ASKS SEVERAL PERTINENT QUESTIONS QUOTED ON THIS PAGE

MODERN SCIENCE MAKES A TRY FOR

Boston Photo [illegible] THE SALVAGE SHIP LYONS
[illegible] TO RECOVER THE GOLD FROM THE SUNKEN FRENCH SHIP "LA LUTINE" OFF THE COAST OF HOLLAND BY THE USE OF POWERFUL HYDRAULIC MACHINERY

Sunken treasure is a magic phrase that kindles the imagination and stirs the blood of everyone who has a tinge of romance in his makeup. Even hard-headed business men, always careful of a penny, find an appeal in such schemes, that lures them on to put in their money to finance the search for the treasure.

Such practical business men are behind the National Salvage Association, which is conducting the enterprise of salving the $6,000,000 sunk with the old frigate *La Lutine* in 1799 off the coast of Holland. So far the expedition has recovered a variety of silver coins, cannon, cannon-balls, grape shot and an anchor, but no great amount of actual treasure. Since the *Lutine* went down in a gale off the entrance to the Zuyder Zee with all but two of her three hundred souls aboard, after she struck on the coast between the islands of Vlieland and Terschelling, some $500,000 has been recovered. Some of this was obtained by earlier expeditions, some by independent divers and some by being washed up on the shore, or brought up by dredges.

The present expedition, which has been working since the summer of 1911, is the most perfectly equipped of any treasure-hunt in history. The salvage steamer *Lyons* is equipped with powerful pumps, which bring up the mud and sand in great streams, to be dropped onto a huge sieve or screen built over the stern. An auxiliary boat is used to lighter any heavy articles brought to the surface. A corps of divers is also kept at work.

At the end of the eighteenth century, Hamburg awoke to find itself the principal commercial port of northern Europe. All Europe had shown tremendous commercial development. The war between England and France caused delays on payments in commercial transactions, and these caused the failure of many German merchants.

To make things easier, English merchandise sold to Germany was paid for by bills of exchange made payable some months later, to enable the Germans to sell the goods and collect the money before it came due. However, the rate of exchange ran as high as 30 per cent., a rate which was prohibitive. To relieve the strain, a group of wealthy English bankers determined to send bullion and specie into Hamburg, to enable their representatives to handle their own payments on the spot and thus avoid the ruinous exchange rate.

The British Admiralty was appealed to for a naval vessel to convoy the packet it was proposed to send with the shipment. Other bankers outside of the group heard

MILLIONS IN SUNKEN TREASURE SHIP

of the plan and asked also for a chance to ship gold and silver. So many applied that it was decided to send a fighting ship, and so the *Lutine*, a 32-gun frigate captured from France, was detailed.

So secretly was everything conducted that it is not known to this day how the treasure was conveyed to Yarmouth, nor is it known exactly how much treasure in bullion bars and coin was shipped on the *Lutine*. From bars already recovered by salvors, however, it is believed that no less than nineteen banking houses were represented, and it is also believed that the English government sent $700,000 in coin to pay off the troops campaigning against France.

La Lutine sailed from Yarmouth on November 9, 1799, and that same night she went ashore on the Dutch coast. The only two survivors were unable to tell anything of the disaster. One died a few hours later and the other became insane from the exposure and hardships he endured.

In 1800 the King of Holland authorized an official expedition to attempt the salvage and with the crude facilities then available, about $278,000 was recovered. Then the wreck settled and no further attempts were made for thirteen years, when, in 1814, Peter Tsachauzier, official receiver of wrecks at Terschelling, made another attempt, obtaining only a few small coins. But he formed a company with a royal Dutch charter, which is still legally in existence, known as the Decretal Salvors. They spent about $25,000 in seven years of fruitless attempts.

Finally the British underwriters were aroused, and, in 1821, the King of Holland made over to King George IV by royal decree all his claimed rights in the *Lutine* and her cargo. King George immediately conveyed the title to the Lloyds' committee. They authorized the Decretal Salvors to work on the wreck for their mutual benefit. But few results were obtained in the various attempts made, until 1858, when divers sent up a total of $140,000 worth of bullion in slabs. Then the sand buried the vessel again, and little could be done. Up to 1860, by various attempts, $220,000 in bullion was added to the amounts theretofore obtained.

Boston Photo News

READY FOR DAVY JONES' LOCKER

Then up to 1889 spasmodic attempts made brought up a total of 11,164 coins, valued at $4,600.

The present National Salvage Association has gone at the work in the most up-to-date manner, with powerful apparatus. They are attacking the wreck on the theory that the greatest amount of the treasure as yet unrecovered is within the wreck and not outside, as heretofore has been supposed. They believe the greater part of the treasure is at the bottom of the wreck, underneath the heavy cannon which crashed down through when the vessel broke her back on the rocks. On the other hand, divers who had been down and recovered bullion on previous expeditions declared that a space twelve feet square was literally paved with silver bars that were wedged so tightly together that they could not be moved with crowbars or fingers. This treasure was at the stern of the vessel, outside the hull. So it is a debatable question whether or not the present expedition will be more successful, proceeding along its mapped out plan, than its predecessors.

VIEWS & REVIEWS

IN the course of a notable address delivered before the Railway Business Association of New York City the following words were used by Mr. James J. Hill:

"The railroads of this country are on a brink. It won't take much to send them over; nor to pull them back. Because they are threatened, the whole country is threatened. Commerce, manufacturing, agriculture, the individual welfare of every worker, is menaced—menaced by this strangest of railroad situations. For unless the facilities and terminals of our railroads are increased the congestion, ever growing, which often paralyzes traffic to-day will result in industrial chaos. * * * * * The demand for transportation is growing apace. It is keeping step with the growth of population and production. In the Pittsburgh district, for example, railroad tonnage grew from 64,000,000 to 152,000,000 in the ten years between 1901 and 1911. * * * * * From 1909 to 1910 our freight ton mileage grew eleven times as fast as our trackage. It grew five times as fast as our equipment. And the rate is increasing every day. With our recent year of large crops and added tonnage it will be still greater.

A Notable Address by Jas. J. Hill

"Now if a manufacturer were confronted with such conditions he would have to do one of two things—refuse business or double his plant. Railroads cannot refuse business. In the first place it is not legal to do so. In the second place it would mean national panic and individual ruin. So the only course is for the railroads to enlarge their plants. This means spending billions of dollars. Even existing plants cannot be worked to their limit unless the size of our terminals is increased.

"And that is the railroad situation to-day. The question is vital to capital and to every workingman in the country. It is the immediate concern of every large city. Cities cannot grow, cannot escape decline, unless the movement of business is kept free. If the commerce naturally tributary to a certain city is handicapped by poor terminals or if burdened with too heavy charges that have come from the excessive cost of enlargement, that commerce will go elsewhere. * * * * *

"Yes, our greatest menace is the crippling congestion. Water routes cannot relieve it. In the first place, the largest streams of traffic in the United States are not in the direction where waterways can be used. In the second place, a waterway less than twenty feet deep cannot compete So the only solution of our railroad problems is to enlarge the terminals, and that is a question of money—a vital question for the railroads to-day."

Mr. Hill's address reveals his broad, statesmanlike knowledge of the fundamental importance of the transportation problem, his recognition of the fact that the crux of the situation lies in the imperative necessity and the tremendous difficulty of securing greatly increased terminal facilities, and the surprising narrowness of his conception of the role which is to be played by waterways in handling the ever-growing volume of traffic in the United States.

WHILE he meant it to be just the opposite, Mr. Hill's address was really one of the strongest waterway arguments which has been presented for many a day. It is true that the profits of capital, the wages of labor, the development of natural resources, commerce, industry, civilization itself are all dependent upon transportation. It is true that the greatest need of the railroad is, not trackage or rolling stock, but terminals, and it is emphatically true that it is an impossibility for the railroads of the United States to procure the multiplied billions of dollars which would be required to provide and equip terminals which could promptly and efficiently handle all the traffic that the country can produce.

A Strong Waterway Argument

What, then, is to be done? Must the progress of the country be forever clogged and hindered by dependence upon a one-sided transportation system which habitually breaks down under the pressure of prosperity? Mr. Hill himself supplied the answer in an address delivered before the National Rivers and Harbors Congress in 1907, when he said:

"In seeking ampler ways for traffic the country turns to its waterways for relief. These are about to emerge into an era of restored usefulness and influence in development of our resources. The age of pioneering relied upon them alone. The age of settlement sought speedier and more universal means of communication. The age of maturity must press all the available agencies of transportation into service. The enthusiasm that built the Erie Canal must be aroused in this generation for a systematic and scientific improvement of all our waterways."

The "systematic and scientific improvement of all our waterways" is a tremendous task, but it is one from which the Nation that has built the Panama Canal has no need to shrink, for the engineering difficulties are not as great as those which have been successfully solved upon the Isthmus, and our national credit is so high that all the funds needed can be easily procured, and at rates of interest far less than those the railroads have to pay.

When he says that the largest streams of traffic in the United States are not in the direction where waterways can be used, Mr. Hill forgets or ignores the new barge canal on which the State of New York is spending nearly $130,000,000. This, when opened to traffic a year or two hence, will give an open waterway from Chicago and Duluth to tidewater at New York City, and one which lies exactly in line with the largest streams of traffic in the United States.

While it is true now, and will doubtless continue to be true for many years to come, that the greatest volume of traffic moves on East and West lines, it must not be forgotten that with the opening of the Panama Canal other great streams of traffic will begin to move on North and South lines. And it is also worthy of note that there were times in 1906-07 when goods could have been sent down the river from St. Paul to New Orleans and then shipped to the other side of the world in less time than it took to send them five hundred miles by rail. The time within which a shipment of goods can be delivered is quite as important as the route or the distance over which it travels to reach its destination.

MR. HILL'S opinions are always worthy of attention, but when they come into conflict with facts the facts must be given the right of way. Here is a fact that runs counter to his often-expressed opinion that no waterway less than twenty feet deep can compete with a railway. At Hannibal, Missouri, is a great cement plant, the management of which decided to ship to New Orleans by water. They tried to get some steel barges, but, as delivery could not be guaranteed for nearly a year—doesn't that look as if somebody, or several somebodies, are buying barges for use upon our rivers?—they bought five Ohio River wooden barges which carry 800 tons each and draw seven feet of water. Last fall the water got so low that the barges could not reach Hannibal and it was necessary to ship the cement to St. Louis by rail and then transfer it to the river. The shipment was made over the Burlington road, which, by the way, is a Hill property, and the freight amounted to $3004, which is more than the cost of sending the 4,000 tons of cement to New Orleans by river and bringing the barges back to Hannibal, up stream. That is, it cost more than twenty times as much to ship 120 miles by rail as for a round trip of 2400 miles by river—in barges drawing only seven feet.

Facts vs. Opinions

UNTIL very recently the advocates of waterways have, rightly enough, laid the emphasis almost entirely on the demand that our rivers and harbors should be given ample and dependable channels. But the time has now come when, without lessening in the least the insistence upon the continuation of work upon the channels, the vital importance of waterway terminals must be continually emphasized and reiterated. For a waterway without terminals can no more be an efficient agency of transportation than could a railroad in the same condition.

Water Terminals Necessary

Three things are essential if the expenditures already made, and those yet to be made, upon our waterways are to be justified by the results. First, every port, whether ocean or inland, must be provided with terminals ample in area and adequate in equipment for the prompt and efficient handling of the traffic offered. Methods of loading and unloading which were already ancient when Noah built the ark must be discarded for those which are up-to-date.

Second, these terminals must be publicly owned and operated for the public benefit; or in any event must be so controlled that they will be open to all users on equal and reasonable terms. It may be necessary to secure the passage of laws giving state or municipal authorities the right to condemn any property needed for use as waterway terminals.

Third, complete coordination and cooperation must be secured between carriers by water and carriers by rail.

HAILED by its friends as a source of untold benefits to all the people and assailed by its enemies as certain to produce a staggering deficit in postal revenues and bring dire disaster upon country merchants, a United States Parcel Post went into operation at the moment the year 1913 began. It is too soon to be sure whether the prophecies of good or the forebodings of evil will be realized, but it has already been proven beyond all doubt that the people are ready to make use of the facilities of the new postal service.

The Parcel Post

Based upon actual returns from fifty cities, which usually do one-half the postal business of the country, it is estimated that there were nearly 40,000,000 packages handled by the U. S. Parcel Post in the first month of its operation. Chicago leads all other cities in the number of parcels handled with a total of 4,168,133, and following in order are New York, with 3,519,788; Boston, 1,151,408; Philadelphia, 1,035,000; St. Louis, 917,809; Cleveland, 879,768; Brooklyn, 834,381; Detroit, 510,072; Cincinnati, 412,381, and Kansas City, 357,102.

Postmasters throughout the country report a larger number of parcels handled during the latter half of the month and prophesy a steady increase in the utilization of the new service. That this result is probable is indicated by the experience of Great Britain, where the inland parcel post was inaugurated August 1, 1883. For the year ending March 31, 1885, the number of parcels handled was 22,910,040. Ten years later the total was 57,136,000 and by 1905 had grown to 97,231,000—the increase being 6,000,000 greater in the second ten-year period than in the first. This was due largely to the fact that the rates were lowered while at the same time the weight limit was increased.

The zone system used in the United States is criticised by some as a joker inserted for the benefit of the express companies, and praised by others as the one thing which will save the country merchants from being overwhelmed by the mail order houses. In most of the countries of Europe the weight limit is higher than it is here—in Belgium it is 132 pounds—the rates are lower and the charge, like that for letter postage, is the same without reference to distance. Even under these far more unfavorable conditions the small merchant has not been crushed out of existence and it seems hardly likely, therefore, that he will disappear from the commercial life of the United States. A recent canvass of the newspapers of Australia and New Zealand, where it has been in operation for some time, showed the unanimous opinion that the parcel post is a net benefit, and only a very few of them believed that the catalogue houses have gained any advantage over the country merchants because of it.

Near the close of his long life the great commoner, William E. Gladstone, said:

"The post-office savings bank and the parcel post are the most important institutions which have been created in the last fifty years for the welfare of the people. I consider the act which called these institutions into existence the most useful and fruitful of my long career."

It may well be that future historians will point to the establishment of the same institutions in the United States as the crowning achievement of President Taft's administration.

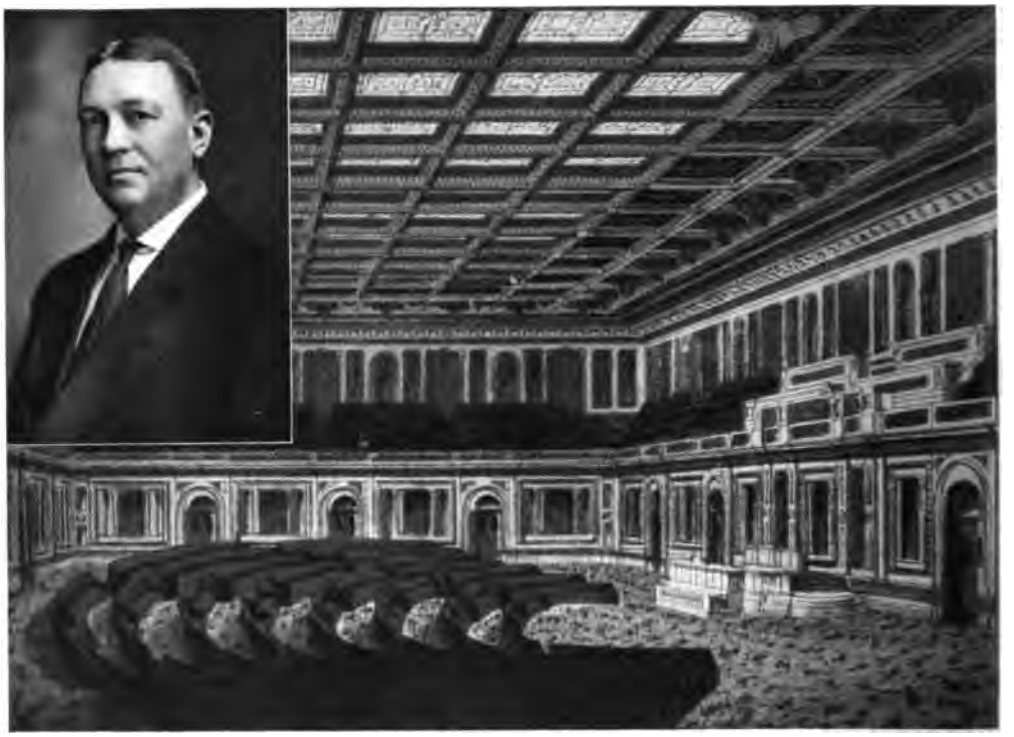
Henry T. Clarke

IN the death of Hon. Henry T. Clarke, on February 2, 1913, there passed away an enthusiast on waterways in general and the Missouri River in particular. He was a Vice-President of the National Rivers and Harbor Congress from its reorganization in January, 1906, until December, 1912. Born April 26, 1834, he went in early manhood to Nebraska, settling first at Bellevue. Later he removed to Omaha, where he was in business for many years, and where he resided until his death.

S. A. THOMPSON.

IN AND ABOUT WASHINGTON

By EDGAR C. SNYDER



ELLIOTT WOODS, SUPERINTENDENT OF CAPITOL. CHAMBER OF HOUSE OF REPRESENTATIVES IN THE YEAR 1860. NOTE LUXURIOUS PLUSH SOFAS

BENCHES, yes plain b-e-n-c-h-e-s, for the Hall of the House of Representatives, "m' Lords and Gentlemen;" and the change is to be made between the final adjournment of the Sixty-second Congress and the beginning of the first, or extraordinary, session of the Sixty-third Congress, which is scheduled to happen on April 1.

And yet benches in the Hall of the House of Representatives are by no means new, for away back yonder, just before the clash of contending armies reverberated around the world and the titanic struggle between the North and the South was on, the solons in the lower body of the National Congress in the days of '59 and '60 sat upon benches, or sofas, upholstered in bright red, which harmonized with the large panels on the lower walls of the hall. And the carpet was bright red, too, with a conventional floral design, the crimson of sofas, floor and walls being prophetic of the blood that would be spilled in the greatest internecine war in all history.

Now after more than half a century has rolled over the United States and the Nation has grown from thirty-one millions, in 1860, to ninety-three millions, in 1913, the demand for additional seating capacity in the historic chamber, caused by the increase of the House to 435 members, has made the return to benches absolutely necessary. And thus once again "we see ourselves reflected in our fathers."

But the benches of the House in the Sixty-third Congress will be a far cry from the sofas in the War Congress. when Buchanan was in the White House. They will be cane-seated, with leather upholstered backs and arranged in segments of circles, sixty-six benches in all, with a

total capacity of 456 seats to take care of the normal increase in the House representation, by reason of increase in population. These benches will be equipped with racks and push-buttons, the need for desks with capacious space for books, writing materials, etc., having passed away when the magnificent office-building set apart for the use of members of the House was completed.

And the man upon whom will devolve the duty and responsibility of making the change in the seating arrangement of the House is the Superintendent of the Capitol, Elliott Woods, who has been doing big things ever since his appointment to this most important position.

Twenty-eight years ago Elliott Woods was a wood-carver in Indianapolis, as had been his father before him. He came to to Washington with Thomas A. Hendricks, then Vice-President of the United States. Mr. Hendricks did not know what to do with the young man, who had powerful and influential friends in the home town. The Vice-President had planned to find young Woods a place in the mechanical department of the Treasury, but as there was no immediate opening, Mr. Hendricks secured him a position in the office of the then Architect of the Capitol, Edward Clark, whom he succeed in office.

Elliott Woods, while essentially a self-made man, has many talents. He plays the violin and piano and has to his credit three or four operas for which he has written the scores. He has one of the best equipped laboratories in the country and is regarded as an authority on wireless telegraphy, as he is on photography and related subjects.

He installed the automobile service in the subway between the Capitol and the Senate Office Building, suggesting the design for the vehicle which has carried thousands of persons to and from the great white building. Now that the auto-car has outlived its usefulness, under the direction of Mr. Woods a monorail system of transportation is almost ready for operation, which, it is believed, will meet all requirements for speed, comfort and safety.

Although Elliott Woods is the busiest man about the Capitol, having four distinct offices to look after, he still finds time to indulge his artistic taste with music or musical composition. He is a many-sided, gifted man.

THE NEW MONO-RAIL SUBWAY CAR UNDER THE CAPITOL. SENATOR O'GORMAN, OF NEW YORK, IN HIGH HAT

LEADERS OF BIG WOMAN SUFFRAGIST PAGEANT
MRS. GLENNA S. TINNIN (LEFT) AND MISS HAZEL MACKAYE (RIGHT)

"Votes for Women!" "Votes for Women!" How the capital of this great Republic will ring with the battle-cry of the suffragists on the day preceding the inauguration of Wilson and Marshall, for the City by the Potomac is to be the scene of the greatest demonstration yet made for Equal Suffrage, and the women back of the movement say that the Pageant-Procession will go down into history as the crowning achievement of their fight for the "Cause."

Mrs. Glenna Smith Tinnin, the originator and designer of the Pageant-Procession, says:

"The pageant is unequalled as a means of giving a vivid and lasting impression of the subject it is intended to illustrate. In our woman's Pageant-Procession we can at once present an argument and tell a story; we can visualize history—and we can do this with such truth and vividness as must impress the most indifferent onlooker, who would be unmoved by any logic of argument or magic of eloquence. We feel that this 'new crusade' of our Pageant-Procession, like those splendid religious processions of the Middle Ages, will have the power to convert, to encourage, and to inspire."

The story sought to be portrayed by the procession, which will be led by the dashing and extremely handsome Miss Inez Milholland, of New York, as the Herald, will show the *actualities* of much that woman has struggled and is still

struggling to achieve, as well as what she has so far attained, while in the ceremonies at the Treasury Building will be symbolized those *ideals* towards which a whole humanity—man and woman—has been painfully struggling through untold ages.

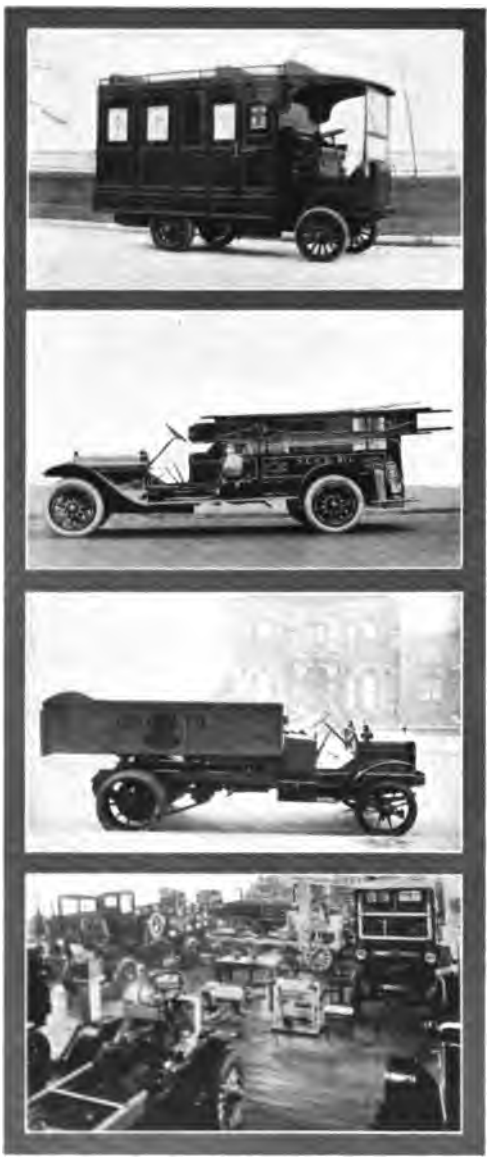
And it is to this end that Mrs. Glenna Smith Tinnin of Washington and Miss Hazel MacKaye, of Cambridge, Mass., a sister of Percy MacKaye, the dramatist, are working together to make the pageant a significant and harmonious whole.

Miss Milholland is the subject of the first portrait on the left; Miss Katherine Hurst, in farmer's costume of brown, and Miss Edna Stahl, in page's costume of blue, appear in the second portrait and again in the third. Posed as Charity, in the fourth, is Mrs. Otis Skinner, the wife of the eminent actor. In the fifth, Miss Florence Fleming Noyes, the classic dancer, is pictured as Liberty. Mrs. Moore and Mrs. Owens, the wives, respectively, of Commodore Moore and Commander Owens, are costumed as farmers in the sixth. Justice, in the seventh, shows Miss Flora Wilson, daughter of the Secretary of Agriculture. Mrs. Marie Jenney Howe is pictured in the last portrait.

CONQUERORS OF THE FROZEN NORTH AND SOUTH. THE ONE ON THE LEFT IS ADMIRAL PEARY, WHO PLACED THE AMERICAN FLAG ON THE "TOP OF THE EARTH;" THE OTHER, CAPTAIN AMMUNDSEN, WHO WON FOR NORWAY THE CONQUEST OF THE SOUTH POLE

This historic event took place recently when Captain Ammundsen came to Washington to lecture before the National Geographic Society, and at a gala banquet received from the hands of his co-laborer in polar snows the Society's gold medal, the highest honor which that organization bestows upon those who have accomplished big brave things, who have done heroic deeds.

TRUCK WEEK CHICAGO AUTO SHOW



DISTINCTIVE TYPES

IN THE ORDER SHOWN: 1. AUTOMOBILE CHURCH, DESIGNED FOR THE USE OF THE CATHOLIC CHURCH EXTENSION SOCIETY IN SPREADING THE GOSPEL TO THE REMOTEST PARTS OF MEXICO AND SOUTH AMERICA.

2. HOSE WAGON WITH AUXILIARY FIRE APPARATUS. THIS MODEL IS OF EXQUISITE DESIGN AND IS CAPABLE OF A MILE A MINUTE SPEED.

3. FIVE TON COAL-CARRYING TRUCK. DUMPS BY ITS OWN POWER.

4. VIEW OF CHICAGO COLISEUM DURING TRUCK WEEK. VALUE OF VEHICLES SHOWN ABOUT $1,000,000.

IT IS ESTIMATED THAT THE ACTUAL SALES DURING THE WEEK TOTALED THE HANDSOME FIGURE OF $500,000.

NOT wholly for the uses of modern commerce are the wonderfully varied types of commercial vehicles which were exhibited at the Thirteenth Annual Automobile Show, held in the monster Coliseum at Chicago during the week of February 10. While every conceivable sort of motor-driven wagon, truck and merchandise-carrying car was represented in the collection that aggregated in value hundreds of thousands of dollars, down to the newest type of auto dump-cart, a new departure in motor-transportation was shown in a beautifully appointed chapel auto, which will be employed by the Catholic Church Extension Society in the spread of the Gospel to the remotest parts of Mexico and South America. The chapel proper is confined to the rear of the car, while the priest's quarters and driver's compartments are forward. In a remarkably compact, but comfortable, "vestry," is a kitchenette outfit and cot, together with a desk and typewriter. A series of wardrobes separates the driver's compartment from the rest of the extraordinary equipage.

By HARRY A.

Horse-drawn fire apparatus is as obsolete as a single-cylinder-engine pleasure car. At the Chicago show a number of types of fire wagons were shown, among them being the White, Federal, Kissel, Pope-Hartford and Harder. All are capable of attaining very high speed and this is facilitated by the use of pneumatic tires. Under ordinary conditions a heavy vehicle would be equipped with solid or cushion tires, but these do not permit of fast operation. The reason these combination wagons—and they are called combination because they carry chemical tanks and water hose—are made to attain a high speed, is because they are expected to be the first on the scene of the conflagration.

In all, seventy-six manufacturers displayed their wares. The cars, which numbered approximately two hundred, occupied the lower floors of the Coliseum and the First Regiment Armory, adjoining. Upon the balconies were displayed commercial car accessories, and the most striking feature of the accessory exhibit was the increased number of steel wheels.

LAST WORD IN MOTOR VEHICLES

TARANTOUS This type has many advantages over the wooden type and a fair prediction would be that the wooden truck wheel will have outlived its usefulness in 1915. One reason for this is the present scarcity of the proper material for the wooden wheels.

A very interesting subject for the spectators was the study of the various body styles. Particularly interesting was the display of tractors and public service cars. The former was exhibited by the Knox Automobile Company, in a number of forms. Tractors are commonly referred to as road locomotives, because of the fact that to them may be attached any form of trailer. These are usually in the form of an ordinary horse truck with the forward wheels removed. An oil tank attached to the three-wheeled tractor was shown by the Knox Company. A performance by a tractor is interesting in that it has the ability to turn completely around within a radius of perhaps fourteen or fifteen feet, a feat which cannot be accomplished by the ordinary form of commercial car.

In dump-car design many noteworthy features have been brought out, principally in the form of automatically unloaded and quick-detachable bodies. A truck arrives at a warehouse, where the body and load are removed as a unit, and an empty body substituted, the entire operation consuming six minutes.

There is no longer the necessity of inquiring as to the time required to negotiate a certain distance and how much time has been spent in loading or unloading the vehicle. A machine tells the modern owner just exactly when his motor truck stopped, how long it stopped and if the motor was still in operation.

The driver of the modern commercial car is not called upon to use any mechanical skill in the operation of his car. The early types were mechanically complicated and required much care, which the ordinary converted horse-vehicle driver could not give. His usual grievance was magneto trouble, but that instrument has been perfected to such an extent that it is now possible to operate one for a full year without attention.

DISTINCTIVE TYPES

IN THE ORDER SHOWN: 1. AUTOMATIC DUMP BODY IN ACTION. PERMITS OF VERY RAPID DISCHARGE OF LOAD.

2. AN EXHIBIT OF THE WHITE AUTO COMPANY, CONSIDERED BY MANY THE MOST BEAUTIFUL VEHICLE SHOWN. ONE SCHOOL GIRL REMARKED: "I AM JUST DYING TO RIDE IN THAT CUTE HEARSE."

3. THIS PEERLESS MODEL INSURES COMFORT TO DRIVER AND PROTECTION TO CARGO. THE CURTAINS ARE READILY REMOVED FOR UNLOADING AND WHEN THE WEATHER RENDERS THEM UNNECESSARY.

4. ALCO THREE-TON-TRUCK WITH STAKE BODY EXEMPLIFIES MUCH OF THE BEST SKILL OF THE AUTO TRUCK ENGINEER.

THE BOSTON MOTOR BOAT SHOW

"BABY RELIANCE II" WAS THE PET OF THE SHOW. THIS DOUGHTY LITTLE CRAFT WAS THIS COUNTRY'S CUP DEFENDER DURING THE SEASON 1912. SHE IS OWNED BY J. S. BLACKTON, POWERED BY AN EIGHT CYLINDER 150 HORSEPOWER STERLING ENGINE AND AVERAGED 47.37 MILES PER HOUR OVER A FIVE-MILE COURSE

THE Boston Motor Boat Show held in Mechanics Hall, February 1st to 8th, inclusive, proved to be as interesting as ever to the thousands who attended.

If the motors, boats and accessories exhibited by the various manufacturers is any criterion to judge by, popular favor runs strongly this year to the medium-sized runabout and small open boat with motors not materially different from last year, but refined in many ways.

Most of the motors exhibited have been tried and found too good to warrant any radical changes so that the manufacturers have devoted their energies to improvements such as a dual ignition system, each cylinder having two separate spark plugs, water-proof plugs, compressed air or electric self-starter attachments which do away with cranking and such other small but important points as heated air intake pipes to the carbureter. All these points are what men who handle their own boats have found to be the only weak points in the older equipments. Most of the two-cycle motors are now built on the three-port system and the equal number of both two- and four-cycle motors show that each system has its advocates.

There are motors ranging in power from the huge 120 horsepower machine to the tiny detachable 1½ horsepower motor that could be carried in a grip and attached to the stern of any rowboat.

The largest size boat shown this year was thirty-five feet. There were several of this size almost too handsome in their piano-like polish to be put in the water. There were all open runabouts with motors under hinged hatches in the after end of their forward deck and all had the complete dashboard control, very similar to an up-to-date automobile even to the foot-pedal control of the clutch. Auto tops were fitted to all of these, the old style of boat awning top being conspicuous by its absence. Electric side lights, bow lights, bulkhead and engine-room trouble finders were installed in some of the handsomely equipped craft. Hydroplanes were very much in evidence.

There were cheap little hydros sixteen feet long and elaborate polished mahogany ones ten feet longer, but the little pot-leaded squat-hulled Baby Reliance II that created such a furore last summer shared attention with them all. V-bottom boats, as skip-jacks are now called, were exhibited in several sizes.

In the open well space in the back end of the hall, an up-to-date racing sail boat stood, her sails sticking clear up above the balcony where, in the center of many accessory exhibits, the ladies' band played popular airs.

It was up in this gallery near a boat hardware exhibit where Capt. Thomas F. Day, in the afternoons, gave interesting lectures about the trip of the motor boat *Detroit* from Detroit to St. Petersburg, Russia.

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VOL. I No. 3

NATIONAL WATERWAYS

A MAGAZINE OF TRANSPORTATION

S. A. THOMPSON, *Editor*

ONE OF THE CARNEGIE STEEL MILLS

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"BITUMASTIC" SOLUTION CEMENT ENAMEL COVERINGS

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© 1912 by the Pittsburgh Photo-Engraving Co.

Drawn by Sherman Smith and Chas. E. Johnstone

THE CITY OF PITTSBURGH AND HER TWIN WATERWAYS

NATIONAL WATERWAYS

A Magazine of Transportation

VOLUME I MAY, 1913 NUMBER 3

PITTSBURGH FROM A NEW ANGLE

By HARRY CHAPIN PLUMMER

*"LONG has Pittsburgh sustained the soubriquet of 'the Smoky City,' but Science and Government are co-operating to forever dispel this murky influence. * * * * There is every indication that when the skies above Pittsburgh shall have cleared for all time, a city of wondrous natural and artistic grace will be revealed, a city whose crowding multitude of attractions will cause the world to exclaim that she had not lived and striven in vain within her veil of smoke."*

ABLAZE with light, the light of myriads of incandescents, is Pittsburgh by night. The restless, nervous activity which characterizes the life of this most wonderful city, this city of dream impressions, by day, continuing into the darkest and, elsewhere, the quietest, hours of the night, demands its own peculiar magic setting of light. Ever so slight is the diminution of this human activity, this dynamic energy, as the night wears on and dawn first flushes the eastern sky.

Some little time before the approach of Easter morn mighty Pittsburgh stood proudly reflecting her nocturnal splendor. Masses of lowering clouds by turns revealed, veiled and hid the moon, just on the wane, and this elusive light lent an individual halo to familiar objects along the waterside stretches of the city, to the Monongahela River, "deep and still, without any perceptible flow," to the succession of bridges melting away in the darkness upstream, and to majestic Mount Washington and Duquesne Heights, which, wrapped in silence and that darkness that artists term *chiar'oscuro*, lift their varying crests for almost a thousand feet, while from the city came that surge of sound that is neither roar nor murmur, but Pittsburgh's undying pæan to the God of Industry.

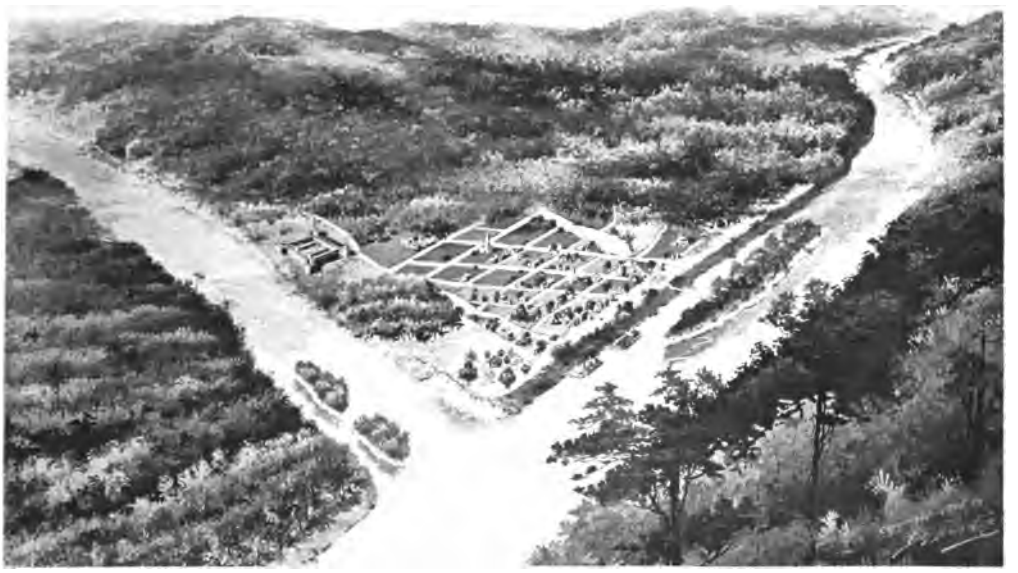
With startling suddenness one of those huge phantom structures, or phantom groups of structures, on the river's bank that they call industrial plants shot heavenward a very inferno of flame. The first angry red changed quickly to yellow. All other lights—the voluptuous radiance of the moon and the brilliant mass of the city's electric illumination—were for the moment dimmed, forgotten. Higher and yet higher, fuller and yet fuller, became the volcanic pyre of light. Then a belch-

FORT DUQUESNE AS SEEN BY WASHINGTON, 1754

Half a year before Washington passed down the Monongahela River and, at the junction of that stream with the Allegheny, derived his quick impression of the strategic importance of the land now occupied by the present city of Pittsburgh, the French, under Contrecoeur, drove off a party of English fur traders who had located there, and built a fortification which they named Fort Duquesne, in honor of the Governor-General of Canada, the Marquis du Quesne de Menneville.

FORT PITT, RISEN FROM THE RUINS, 1758

To relieve Major James Grant, who had sustained defeat in an attempt to surprise the French stronghold, General Forbes led a British army of 7500, whose quartermaster was Benjamin Franklin, from Philadelphia, and after many conflicts with bands of hostile Indians, arrived before Fort Duquesne, which the French burned before taking flight. Forbes re-named the ruined post Fort Pitt, while the little community of 250 souls huddled about the fortification became known as Pittsburgh.



PITTSBURGH AND FORT FAYETTE, 1791

To better guard the town of Pittsburgh, now grown to 2800 souls, against incursions of the Indians from the Allegheny Valley, a fortification was erected above the community, at about the present Penn Avenue and 9th Street and named Fort Fayette. The first large iron contract filled at Pittsburgh was the casting of four hundred 6-pound shot for use in General Wayne's expedition against the Indians, undertaken in the following year.

PITTSBURGH, "THE IRON TOWN," 1817

Following the discovery of iron ore in the Youghiogheny Valley toward the end of the 18th century, Pittsburgh made rapid strides as a manufacturing center and became known as "the Iron Town." By 1817 the population had increased to 6500. The glass, lumber and boat-building trades flourished at this period, and two national armed galleys, the *President Adams* and *Senator Ross*, were launched. The star of Pittsburgh's industrial destiny was already in the ascendant.

ing of black smoke, all-engulfing, and the flames as suddenly died. Again Pittsburgh reflected her nocturnal splendor.

From everywhere and from nowhere there creeps in upon the scene a filmy, diaphanous curtain of vapor, vanguard of one of those heavy river fogs for which Pittsburgh and her marvelous natural environs are famous. Gradually the lustre of the city is clouded. But the alignment of street lights from the waterfront inward remains clearly defined. Heavier masses of fog now drift in, and yet heavier masses.

Looking down from Mount Washington is pierced by a ray of leaden blue. It is the dawn of Easter!

Forth from those recesses of shadow, where we know the city stands, and another river flows, and great hills arise, there floats the cadence of Easter bells, reduced by their remoteness to the silver voice of the celesta. Their Angelus is measured in a staccato rhythm that symbolizes unconsciously the virile energy of the magnificent city whose worshippers they call to prayer.

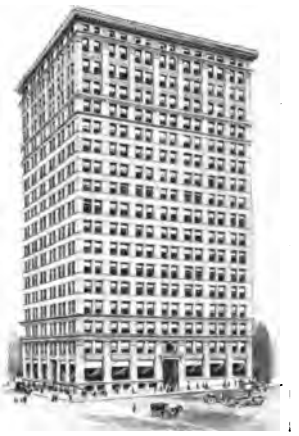
Before the approaching day the shadow mass gives way. Black now yields to gray,

"THE NATION'S WORKSHOP," 1859

GROWN TO A CITY OF 90,000, PITTSBURGH, IN 1859, WAS THE INDUSTRIAL CENTER OF THE AMERICAS. THE RAILROAD AND THE TELEGRAPH WERE AT THAT TIME ILL-DEVELOPED, AND ALMOST ALL OF THE TRAFFIC WAS CARRIED ON BY THE RIVERS

in the direction of the electric opulence of a while ago, now curtained by the smoke-tinged fog, the beholder descries a few of the nearer lights of Pittsburgh and of the distant Allegheny heights as stars studding a background of dusky velvet. Where flowed the river there is a yawning abyss. The surge has become muffled and now is stilled. Perhaps it is the hallowed occasion; perhaps but the fog. Pittsburgh reposes in silence absolute! Gray follows gray, yielding to black upon black, the only relief those twinkling stars of light against their background of dusky velvet. Another moment and the sombre heaven and gray to the light of morning, and by one of those kaleidoscopic changes which mark every phase of the organic life of the region, the Industrial Capital of the World, whose yearly commerce has come to double that of New York, London, Hamburg and Marseilles combined, stands revealed in its strange and fascinating contour of topography.

From the "fictionized" descriptions of the city, which have come to be accepted throughout the country, Pittsburgh is apt to be regarded from without as a sort of magnified composite of factory, smelter, mine and switching-yard, wherefrom there



THE OFFICE STRUCTURES OF DOWNTOWN PITTSBURGH ARE MANY AND IMPOSING

OLIVER BUILDING
BANK OF PITTSBURGH
ARROTT BUILDING
FARMERS' BANK BUILDING
KEENAN BUILDING
JENKINS ARCADE
CARNEGIE BUILDING
FRICK BUILDING
FIRST NATIONAL BANK

issue smoke and soot and dirt and an admittedly vast production of distinctively material objects. In the phenomenal accomplishment of the mills, the fact that somewhere in the confusion of steel and iron, cement and coal, a community of more than a million souls is submerged ofttimes is forgotten, or not at all taken into consideration.

As the impressively splendid educational and art institutions of Pittsburgh, the many stately church edifices and schools, the great banks, fine hotels, shops and railroad stations, the palatial homes and the magnificent system of parks and boulevards are surveyed, the truth is forced home that here is a city that combines the affluent dignity of New York, the polished elegance of Boston and Philadelphia. the sheer might of Chicago and a picturesque setting that, in its own way, rivals San Francisco's.

A city of delightfully capricious moods of atmosphere is Pittsburgh. The hills and the rivers that embrace it impose constant and erratic changes of temperature, of wind and of light, but these changes are delightfully and subtly effected, and the smoke, so decried by unfriendly critics and at the present time warred upon by the municipality itself, plays a fascinating role in these atmospheric metamorphoses. Behind Pittsburgh's every frown there lurks a radiant smile. The passing cloud, curtain of fog, drift of smoke and even the shower that seems to have ushered in the very deluge, invariably are dispelled by the rays of the sun. As is the play of the elements over Pittsburgh, so is the street life—changing, shifting, restless, never stilled, and the older thoroughfares, for the most of the working day, present a maze of surging, hurrying humanity.

A glance from Mount Washington over the inspiring panorama that is presented by Pittsburgh and its sharply outlined surroundings of land and water suffices to demonstrate the commanding position which the city derives from its situation at the point where the Monongahela and the Allegheny Rivers unite their waters to form the Ohio.

"The Father of His Country" was also the Father of Pittsburgh. On the 24th day of November, 1753, Washington arrived at the point of land now occupied by the city. He had been sent to the Ohio by Governor Robert Dinwiddie of Virginia to treat with the commander of the French forces, who had, in entering the Ohio Valley, trespassed upon the domain of the crown-chartered Ohio Company. Proceeding down the Monongahela, he was struck by the strategic advantage of the land dividing the Allegheny and the Monongahela above their junction, and his unerring judgment prompted him to the following words of recommendation—words which were destined to spell the industrial supremacy of the situation long after the necessity for its military employment had passed:

"I think it extremely well situated for a fort; as it has absolute command of both rivers (the Allegheny and the Monongahela). The land at the fort is twenty-five feet above the common surface and the water, with well-timbered land all around it, very convenient for building. The rivers are each a quarter of a mile or more across, and run very nearly at right angles —the Allegheny appearing northeast, the Monongahela southeast. The former of these two is very rapid and swift-running water, the other deep and still, without any perceptible flow."

The strategic value of the city's site for defensive purposes was recognized by the United States Government at the outbreak of the Civil War, when one of the chief arsenals in Union territory was there established.

Almost without regard to the vicissitudes of the recurring wars of the early period, the commercial development of the site whereupon Pittsburgh now stands was rapid. Three months after Washington's visit, Captain Trent and a few Virginia militia arrived at the Forks and laid the foundation for a fort. On the 17th day of April, 1754, the unfinished stockade, commanded by Ensign Wood and garrisoned by about fifty men, was surrendered to the French Captain Contrecoeur. A fortification was straightway erected and named Fort Duquesne, in honor of the Marquis du Quesne de Menneville.

No more cruel chapter is recorded in the annals of New World history than the short and decisive conflict that took place on the morning of July 9, 1755, eight miles up the Monongahela River from Fort Duquesne, between the French and In-

ELEGANCE AND DIGNITY MARK PITTSBURGH'S EDUCATIONAL INSTITUTIONS MUSEUMS AND PARKS

HIGH AND PARK

CARNEGIE LIBRARY

18TH REGIMENT ARMORY

WEST PENN HOSPITAL

FORBES (BASEBALL) FIELD

PITTSBURGH ATHLETIC ASSOCIATION CLUB HOUSE

SOLDIERS' MEMORIAL

OLD BLOCK HOUSE, 1764

UNIVERSITY OF PITTSBURGH

By W. Irvine, Museum Inst. Assistant, reproduced by the Carnegie Museum, Pittsburgh.

ROYAL EGYPTIAN CRAFT IN CARNEGIE MUSEUM

ANTEDATING ABRAHAM BY SEVEN CENTURIES IS A CEDAR BOAT 43 FEET LONG, WHICH WAS FASHIONED BY THE EGYPTIANS AND DELIVERED FROM THE TOMB OF A MASTER OF THE ROYAL CRAFT. IT NOW REPOSES IN THE CARNEGIE MUSEUM AT PITTSBURGH

dians, on one hand and the British, commanded by General Edward Braddock, on the other, which ended in "Braddock's Defeat." To-day one of the busiest of industrial scenes in all America is the spot where this battle raged.

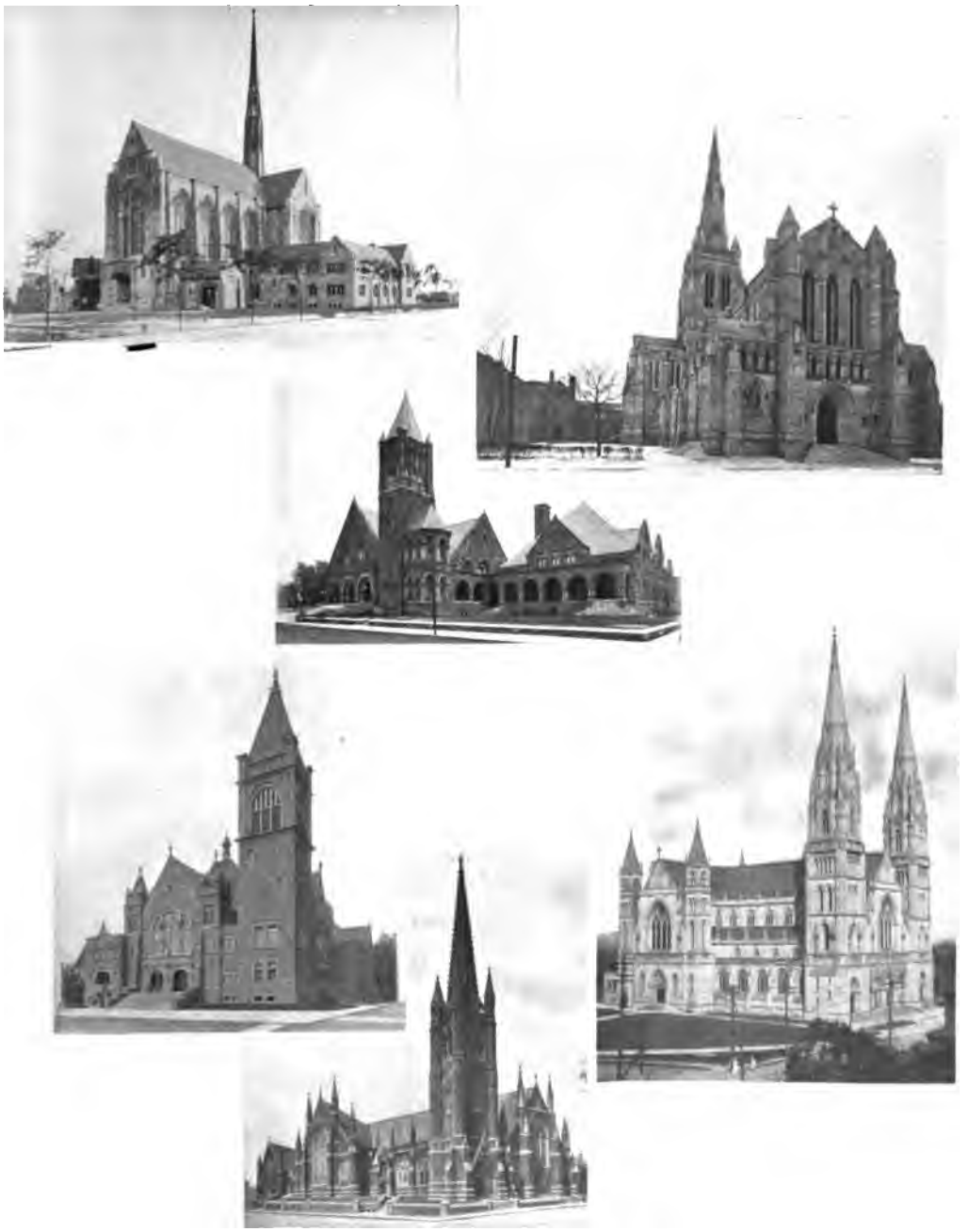
The Frick and Carnegie Buildings and the massive Allegheny County Court House stand upon the site of a second engagement between the French and the English. A party of 800 under Major James Grant attempted to surprise the fort on the morning of September 14, 1758, but was overwhelmed and routed. Happily the British General Forbes, who had moved from Philadelphia at the head of an army of 7,000, came within fifteen miles of the fort on the 24th of November, when the French burned the fort and fled. The next day Forbes occupied the place and named it Pittsburgh, after William Pitt the elder, Prime Minister of England, who was justly celebrated for the friendliness he had manifested toward the American colonists.

Seven months after the Declaration of Independence at Philadelphia and little more than a quarter of a century later than Washington's arrival on the scene, fourteen carpenters and sawyers came to Pittsburgh and set to work to build 10 large batteaux, 40 feet long, 6 feet wide and 32 inches deep, which were designed to transport troops. Such was the commencement of the boat-building industry, which developed steadily in volume and in monetary representation until the end of the last century, and which has but lately entered upon a notable revival and expansion.

This period witnessed the birth of two other industries which were destined to take an important place in the building of the Industrial Capital of the World of to-day—the lumber trade and the manufacture of glass.

Meanwhile iron had been discovered by Christopher Harrison along the waters of the Youghiogheny, and the closing decade of the eighteenth century found the furnace known as the Alliance Iron Works in operation. A "record" contract of the day was ordered in January, 1702, for the making of 200 six-pound shot for use at Fort Pitt and in General Wayne's expedition against the Indians in the Ohio country.

From the modest shipments of iron ore and lumber and produce that were borne on the river in those early days, the Monongahela has developed a traffic that last year totaled 11,538,228 tons, or 50 per cent. of the traffic of the entire Mississippi River system, of which the Monongahela



STATELY CATHEDRAL AND CHURCH EDIFICES GRACE THE CITY'S EMINENCES

FIRST BAPTIST CHURCH — CALVARY EPISCOPAL CHURCH

SIXTH UNITED PRESBYTERIAN CHURCH

EMORY METHODIST EPISCOPAL CHURCH — ST. PAUL'S ROMAN CATHOLIC CATHEDRAL

THIRD PRESBYTERIAN CHURCH

JOHN M. GOEHRING
PRESIDENT OF THE CITY COUNCIL

MEMBERS OF THE CITY COUNCIL
P. J. McARDLE
S. S. WOODBURN
W. A. HOEVELER
ROBERT GARLAND

MEMBERS OF THE CITY COUNCIL
E. V. BABCOCK
ENOCH RAUH
W. G. WILKINS
J. P. KERR

in navigable mileage represents but the slightest fraction—about 1 in 140.

The wonder of great modern Pittsburgh is not so much the stupendous mass, volume and collective wealth of her industries as their ramifications. Every object, useful and ornamental, that the mortal mind might conceive, in one form or another is produced in Pittsburgh, but in magnitude of capital invested and labor employed the iron and steel manufactories are preeminent.

The latest statistics compiled by the Pittsburgh Industrial Development Commission reveal the fact that of the total capital of $642,527,046 invested in the multitudinous industries of the metropolitan district of Pittsburgh, the sum of $421,131,927 is represented by the iron and steel and wire works, blast furnaces and forging plants. Of the total of 2,369 industrial establishments maintained in the district, 321 are devoted to the manufacture of iron and steel products.

Engaged in the maintenance of all the industries of the city are 159,977 salaried employes and wage earners, and of this number 88,194 are on the pay-rolls of those making iron and steel, and of the total amount of $115,049,924 paid in salaries and wages, the iron and steel workers receive $66,788,642.

It costs $366,892,433 for raw materials necessary to keep the "world's workshop" busy, and $264,268,372 are spent for the raw materials that enter into the production of iron and steel.

Pittsburgh's colossal contribution to the production of the world is represented in the grand total of $578,815,493, and of this sum the iron and steel yield is considerably more than three-fifths, or $389,924,590.

In addition to the older and well-known forms of steel manufacture, the great mills have lately entered upon the making of steel railroad ties. The steady and constant growth of this product gives promise of a huge plant soon to be erected to provide for its separate needs. The advantage of the steel tie has not far to be sought. It may be rolled to

any length desired and it is well-nigh indestructible. A single tie may be made to support four tracks. Already the Bessemer & Lake Erie Railroad is equipped its entire length of 250 miles with steel ties, while the Elgin, Joliet & Eastern, the Duluth, Mesaba & Northern and the Duluth, South Shore & Atlantic Railways have followed suit. On its street railways, the City of Cleveland, Ohio, permits no other to be used, owing to the fact that the now discarded wooden tie necessitated the frequent tearing up of streets.

Another thriving industry, that of making glass, wherein more than $20,000,000 is invested, has developed a new and distinctive "side line," which gives indication of one day rivaling the ancient enterprise from which it has sprung, in a product known to the trade as "Carrara glass." In appearance it closely resembles the marble of the famous Italian quarries. The process of manufacture is fairly identical with that of making heavy plate glass. Unlike marble, "Carrara glass" is impervious to moisture. It retains its original color and may be as easily cleaned as window glass. For these reasons it has come into active demand for use in hospital operating rooms, soda fountains, bathrooms, lavatories and similar places of installation, where absolute sanitary conditions are requisite.

Photo D. Rosser

WILLIAM A. MAGEE
MAYOR OF THE CITY OF PITTSBURGH

The product has but lately found a place in commercial operations, in the wainscoting of corridors and interior finish work, and large installations have been made in the recently completed Woolworth Building in New York and Union Central Life Insurance Building in Cincinnati. As the cost of output has been brought almost to a par with that of Tuckahoe marble, it

THE $1,000,000 "HUMP REMOVAL"

UNIQUE AMONG MUNICIPAL ENGINEERING WORKS AND ACCOMPLISHED WITH LITTLE OR NO INTERRUPTION TO TRAFFIC IS THIS IMPROVEMENT, UNDERTAKEN IN THE HEART OF THE BUSINESS DISTRICT, BY WHICH 2.10 MILES OF STREETS, WITHIN AN AREA OF 33 ACRES, HAVE BEEN REDUCED FROM A GRADE OF 7.5 PER CENT., TO A GRADE OF 4.8 PER CENT., WITH A MAXIMUM CUT OF 16.3 FEET

is anticipated that "Carrara glass" will come to be yet more freely used in the construction of office buildings and ornamental structures.

Innate refinement and a natural studiousness are a distinguishing trait of the average Pittsburgher. The manufacturer is not content to produce a certain type of material. He must needs familiarize himself with the origin and the history of that material. The maker, for example, of steel, or of iron, or of plate glass, will be found to be fully versed in the career of his industry from its infancy and, frequently, will be found to be the possessor of priceless volumes, prints and art works upon the subject, while he may, also, maintain a private art gallery or library of the broadest range, or may have endowed a public institution of that character.

On the desk of Carl Sherman Lamb, an officer of the Pittsburgh Plate Glass Company, there repose three little volumes that would be coveted of litterateurs here and abroad, and they represent many months of search through the bookstalls of old London. One is "Arte Vitraria" of Antonio Neri, published, as its title would indicate, in Latin, and bearing the imprint of "Florentinide, Amstelædami, 1686." Another is "The Art of Glass," from the French of H. Blancourt, first translated into English in 1699 and printed in that year at London. And yet another is "The Plate Glass Book," printed in London in 1758 and "edited by a Glass House Clerk."

In the quaint phraseology of the seventeenth century, "The Art of Glass" relates the social and political prerogatives enjoyed by those who engaged in the making of mirrors and whose operations were so surrounded by the element of mystery as to partake, in the popular mind, of the wizardry of alchemy:

> *All thofe who employ themfelves in the Art of Glafs, do it always without derogating from their Quality, as we have noted in Chap. 3. which our Kings have always taken care to maintain.*

STEEL MERCHANDISE BARGE USED ON OHIO AND MISSISSIPPI RIVERS

BUILT BY AMERICAN BRIDGE COMPANY FOR CARRIAGE OF STEEL PRODUCTS TO NEW ORLEANS. DIMENSIONS: 200 FEET LONG, 36 FEET WIDE, 10 1-2 FEET DEEP; CARGO CAPACITY, 1,500 TONS ON NINE-FOOT DRAFT

Another fragment from this ancient chronicle sets forth that in those early years of the industry a "plate glass trust" was created.

A description of the process of plate glass manufacture, contained in the volume of 1758, reveals the fact that the manner of grinding and of polishing, in its essential features, differed not basically from that of to-day. A comparison of prices contained in a "Tariff of Prices of Polished Plate Glass," appended to the later volume, shows that in that day a sheet of plate glass 30 by 50 inches was quoted at £26 7/ ($131.75), as against the figure of $4.50 prevailing in the present-day market.

BRIDGE BUILDERS TENDING THEIR GARDENS IN OFF HOURS

THE WORK-A-DAY ROUTINE OF LIFE IN THE BIG PLANT OF THE AMERICAN BRIDGE COMPANY AT AMBRIDGE, PENNSYLVANIA, ON THE OHIO RIVER, IS RELIEVED BY COMPETITIVE GARDENING IN WHICH THE EMPLOYES ENGAGE ON LANDS PROVIDED THEM GRATIS BY THE COMPANY

Treasured in Pittsburgh's art galleries, museums and libraries are rare paintings, statuary, *objets d'art*, books and manuscripts and the physical evidences of lost civilizations. A relic of the prehistoric age is the famous diplodocus which stretches its almost incredible length in the main salon of the Museum of the Carnegie Institute. By the generosity of the Institute's founder, Andrew Carnegie, replicas of this monster skeleton have been presented to the leading scientific museums of Europe and North and South America.

Of scarcely secondary interest is another exhibit, an original Egyptian craft, which is credited to antedate Abraham by almost seven centuries. This boat, which was fashioned of cedar and the parts bound together by thongs of a fibrous material, in all probability papyrus, but now kept together by steel wire bands, is 36 feet long, 8 feet wide and about 5 feet deep, with a deck of cedar planking, was evidently built to withstand the wash of seas off and beyond the Delta of the Nile. It was recovered in the nineties from a

PART OF THE HARVEST FROM THE AMBRIDGE GARDENS

PRIZES ARE BESTOWED BY THE AMERICAN BRIDGE COMPANY FOR THE LARGEST AND BEST CROPS GROWN BY THEIR EMPLOYES IN THE GARDENS AT AMBRIDGE, WHILE THE YIELD BECOMES A FACTOR IN DECREASING THE COST OF THE EMPLOYES' LIVING

Photo Eug. Pirou, Paris

W. J. HOLLAND, Ph.D., LL.D.

DIRECTOR CARNEGIE INSTITUTE; IN ROBES OF CHANCELLOR AND WEARING DECORATION OF THE LEGION D'HONNEUR

crypt at Dahshur, Egypt, where, ages after its probable interment, the descendants of Abraham played an important historical role. Found in the crypt with the cedar vessel was the mummy of a "Master of the Royal Craft," a functionary who may be supposed to have occupied the same relation to the ancient Egyptian state as is to-day held by the American Secretary of the Navy.

The first photograph to be taken of the historic craft in its entirety is presented on an accompanying page of NATIONAL WATERWAYS.

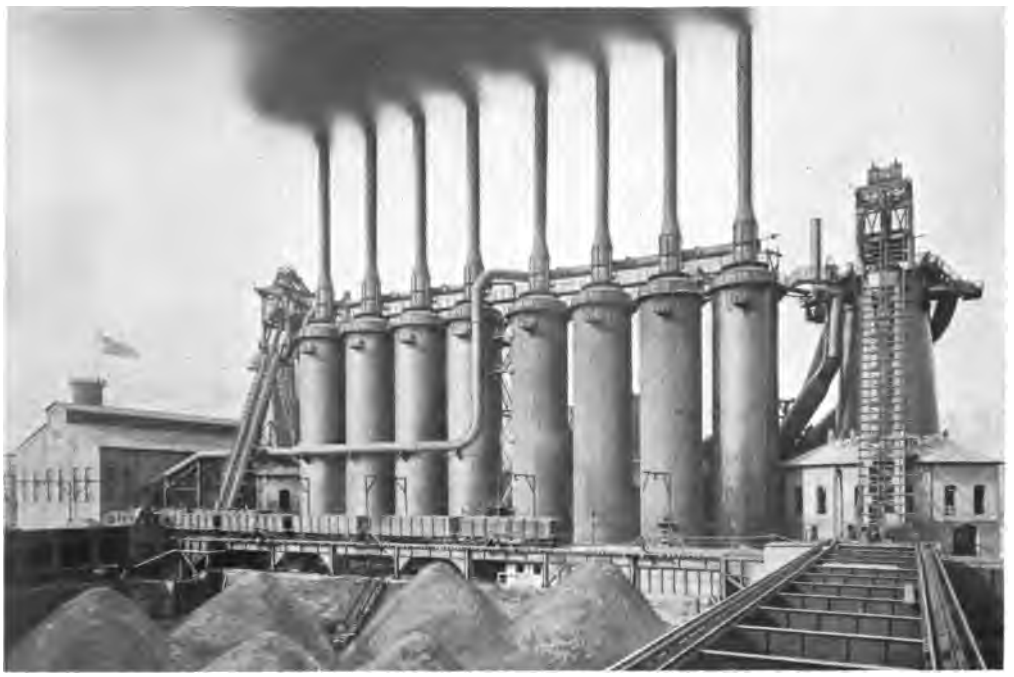
Fourteen thousand miles of navigable rivers are directly connected with Pittsburgh. While her present industrial supremacy has been evolved from this natural means of communication with the very heart of the United States, but a minimum advantage has been taken of the city's extraordinary situation. This has been due principally to the fact that the Ohio River channel, upon which the water traffic in and out of Pittsburgh chiefly depends, is wholly or partly closed to navigation at certain periods of the year—by ice in winter and drought in summer. The Davis Island dam, erected in the Ohio River by the United States Government, five miles below the city, at a cost of $940,000, forms a slack-water harbor eight miles in length, which provides a normal depth of ten feet.

By the River and Harbor Act which passed Congress June 25, 1910, the Ohio River was placed first on the list of waterways scheduled for improvement, and the accomplishment of navigation throughout its length was made in the nature of a national project—as much so, indeed, as the completion of the Panama Canal. This great work was planned to consume twelve years from that date, to entail an expenditure of $63,000,000, and to embrace the construction of 54 locks and movable dams. Fourteen of these locks and dams are completed, twelve are now under construction and, by the last River and Harbor Act, signed by the outgoing President on March 4, four more were authorized. It is a fact worthy of note that of the 7000 miles of tributaries of the Ohio River, 90 per cent. have been canalized, while the parent stream, until the legislation aforementioned, had been largely neglected.

Against a prevailing rail cost of $4.50 per ton, coal is being transported from Pittsburgh to New Orleans, a distance of 2100 miles, by barges on the Ohio and Mississippi Rivers, at a rate of 70 cents per ton, and it is figured that this cost may be still further lowered by the improvement of the Ohio River.

It were unjust to say that Pittsburgh has awakened. The city is of the sort—and there are few such—that never sleeps! Pittsburgh, for more than a century and a half, has been—not sleeping, but so engrossed in the building of her multitude of industries to their present veritably incredible stage of production, that she has failed to realize how those industries have encroached upon her civic dignity and charming physical environment.

An American city of the twentieth century would surely be an exception that had not to face that vital problem of the age, the high cost of living. Pittsburgh is setting about to solve that problem, and they who think for Pittsburgh are broadly approaching the subject from the standpoint of development of the hitherto neglected water transportation facilities, with their inevitable effect upon living conditions, of the improvement of street



THE MODERN TYPE OF BLAST FURNACE

THE CYLINDERS TOPPED BY SMOKE-STACKS ARE CALLED HOT-BLAST STOVES. THE AIR, FORCED BY POWERFUL ENGINES AROUND THE WHITE-HOT FIRE-BRICK WITH WHICH THEY ARE LINED, IS HEATED TO A TEMPERATURE OF 1200 TO 1400 DEGREES

traffic, of the increase of communication between the sections of the city divided by the rivers, and of the beautification of the waterside and the highways and byways of a city of enviable historic associations.

"The chief hope of Pittsburgh against rising prices and high costs lies in cheap transportation," declared William A. Magee, the Mayor, in his last annual message. "The opening of the Ohio and Allegheny Rivers will give Pittsburgh the benefit of water carriage costs not only for those supplies entering the city on the river, but the competitive principle will result in lower transportation costs generally, regardless of the type of carriage."

Pittsburgh's vexing problems of the day are the problems of the greater cities of the East. Like New York, Boston, Philadelphia and Baltimore, the city, in its older section, suffers from the restrictions of narrow thoroughfares imposed upon it by the short-sightedness of its early settlers. Rugged hills upon one side and the two rivers, the Monongahela and the Allegheny, upon the other sides, encompass that older section and render outward expansion well-nigh impossible, saving, as on Manhattan Island, in New York, by resort to the erection of skyscrapers. Many such, of imposing proportions and notable architectural beauty, have been built, and the immense numbers of people whom these accommodate but add to the congestion of traffic in the downtown streets and in the arteries of travel leading therefrom during the so-called rush hours.

Pittsburgh's river frontage extends for 31½ miles—along the Monongahela for 12½ miles, along the Allegheny for 11½ miles and along the Ohio for 7½ miles. A studied scrutiny of the scene discloses the fact that the benefit realized from this river approach is far from what it should be. The practical sense and the æsthetic sense are at once startled by the evidence of woeful neglect that is to be seen on every hand—and this in the face of endowments by nature that should contribute to absolute grandeur of landscape and the fullest utilitarian accomplishment.

D. Rosser
W. M. JACOBY
Superintendent Bureau of City Properties

Eils Bros.
WM. H. STEVENSON
President Chamber of Commerce

Paluce Studios
IRA S. BASSETT
Traffic Manager Chamber of Commerce

Harris & Ewing
Hon. A. J. BARCHFELD, M. C.
Member Rivers and Harbors Committee

Harris & Ewing
Capt. W. B. RODGERS
Director Nat'l Rivers and Harbors Congress

One needs but to rest the eye upon the Soldiers' and Sailors' Monument, crowning a stately bluff on the Allegheny shore just where the river of that name enters the Ohio, to appreciate the striking contrast between what it is possible to effect at Pittsburgh and what generally has been effected.

Ingrained in the program for the economic progress of the city is the fullest development of the riverfront resources, and this development is vitally related to the greater problems of transportation, chiefly by water, the solution of which must forever dispel the fear of the loss to Pittsburgh of its industrial supremacy and make for the tenfold expansion of its present industry and commerce.

Not all men are agreed as to the specific forms which the several movements for the bettering of the city's status shall take. But an encouraging feature of the liveliest controversy is to be discerned in the trend of all efforts by political and civic bodies of widely divergent interests toward the completest utilization of the magnificent waterfront.

To form a comprehensive plan for the relief of existing conditions at Pittsburgh, Dr. J. T. Holdsworth, of the University of Pittsburgh, was recently commissioned by the Mayor to study and report upon the economic needs of the city. The results of Dr. Holdsworth's labors are set forth in a treatise which has gained nation-wide prominence, known as the "Economic Survey of Pittsburgh." The cost-of-living problem occupies a leading place in the scholar's consideration, and emphasis is put by him upon what he terms the "primary needs" as follows: Elimination of the smoke nusiance; more and better moderate-cost homes; improvement of transit facilities; larger utilization of educational and recreative facilities; flood protection; diversification of industries; lower freight rates; better utilization of land; continuous social surveys, and other features that are essentially administrative or sociological, and quite local in their relation to the question at issue.

The local transportation problem Dr. Holdsworth regards as of exceeding importance, and it is a significant fact that he points to the Pittsburgh-to-the-Lakes Canal project, and the larger utilization of the waterways approach to Pittsburgh for the extension of trade, as "questions vital to our industrial and economic growth."

With Mayor Magee as its chairman, the Lake Erie and Ohio River Ship Canal Association was organized in December, 1910, to work in co-operation with the Lake Erie and Ohio River Ship Canal Company, a corporation which had been organized five years previously under a charter from the State of Pennsylvania and under a national charter conferred by act of Congress, and the Ohio and Pennsylvania Ship Canal Company, of Cleveland, Ohio. The president of the Pennsylvania corporation is John E. Shaw, of Pittsburgh.

The projected waterway will extend from the point on the north bank of the Ohio River at Beaver, Pa., where the Beaver River flows into that stream, in a general north-northwest direction, to the mouth of Indian Creek, on Lake Erie, about seven miles west of Ashtabula. The

Baird

COL. T. J. KEENAN
Vice-President for Pennsylvania Nat'l Rivers and Harbors Congress

Johnston

COL. H. P. BOPE
President Pittsburgh Industrial Development Commission

Johnston

F. F. NICOLA
Vice-President Pittsburgh Industrial Development Commission

Johnston

JOHN E. SHAW
President Lake Erie & Ohio River Ship Canal Company

Johnston

GEN. A. L. LOGAN
President City Planning Commission

total length of the route is 103 miles, but for 50 miles the Beaver and Mahoning Rivers will be canalized, leaving only 53 miles of canal actually to be dug to provide a 12-foot barge channel.

The present session of the Pennsylvania Legislature has under consideration a measure to appropriate $150,000 for preliminary surveys and to authorize the appointment of a commission empowered to build and operate the canal with moneys voted by the various counties or municipalities of Pennsylvania, Ohio and West Virginia that would be benefited by the new waterway. Measures have already been passed at Columbus, Ohio. and Charleston, W. Va., to concur in this plan, and these, it is believed, will have the effect of providing an encouraging precedent for the passage of the legislation at Harrisburg, where the bill recently passed out of the House Judiciary Committee, with the approval of that body, and now awaits the consideration of the House.

The cost of the proposed canal is estimated at $60,000,000, which will provide for interest during the period of construction and thenceforth until the tolls from commerce cover all fixed charges.

The major percentage of eastbound traffic on the Great Lakes is iron ore moving from Lake Superior to ports on Lake Erie, whence it is hauled by rail to furnaces in the territory to be traversed by the canal and in the Upper Ohio and Monongahela valleys, of which Pittsburgh is the logical center. Likewise, bituminous coal is contantly moving by rail from the latter region and from the Allegheny River territory on its way to Upper Lake ports for consumption. The canal will provide a continuous water service for this commerce, that now averages 30,000,000 tons moving south from the Superior district to Pittsburgh, and 25,000,000 tons moving north from Pittsburgh.

By the creation of the proposed waterway more than three-fourths of the steel-producing interests of the country will be afforded a direct water service. As two tons of ore are required in the making of a ton of pig iron and the prevailing rate for the former is 96 cents per ton, a saving of the difference between $1.92, the present rate for two tons of ore, and a probable $1.00 for the two tons delivered by water, would be realized to the independent consumer. Pig iron has been quoted at from $13.00 to $14.00 per ton for the last three or four years.

From Lake Erie to Duluth, a distance of more than 900 miles, coal is moved in steamers of from 8,000 to 12,000 tons capacity for 30 cents per ton, while the rail haul from Pittsburgh to Lake Erie, a distance which averages only about 135 miles, is approximately 90 cents per ton.

The Lake Erie and Ohio River canal will create a continuous water route between Lake Superior and the St. Lawrence Valley, on the one hand, and the Gulf of Mexico and the Pacific Ocean, via Panama, on the other hand, and when the Erie Canal is re-opened, will complete a splendidly economical waterway between Pittsburgh and the Atlantic Ocean, with tremendous advantages accruing to the export trade of the Pittsburgh section.

LARIMER AVENUE BRIDGE SPANNING THE BEECHWOOD BOULEVARD

AN EXAMPLE OF THE ARTISTIC SOLUTION EFFECTED OF THE PROBLEM OF DECLIVITOUS HILLSIDES THAT BREAK THE CONTINUITY OF PRINCIPAL THOROUGHFARES. THE LARIMER AVENUE BRIDGE, THE LONGEST AND ONE OF THE MOST BEAUTIFUL OF HIGHWAY STRUCTURES IN THE UNITED STATES, IS NOW NEARING COMPLETION

The municipal authorities and the various civic and commercial organizations are at work upon a great program which is designed to place Pittsburgh in the front ranks of the progressive cities of the world. Among the greater schemes in this program is the so-called Anderson plan for bringing into the city additional trunk lines of railway by means of a proposed subway system. In an interview with the writer, Mayor Magee thus dwelt upon this subject:

"There are several trunk lines passing within striking distance of Pittsburgh which do not enter the city because of the prohibitory cost of terminals. The Gould interest forced its way into Pittsburgh with the Wabash Terminal at a cost of $25,000,000, a cost so great as to throw the Wabash and the Wheeling & Lake Erie Railroads into the hands of receivers, destroy the Gould dream of a trans-continental railroad and make serious inroads upon the Gould fortune.

"The Anderson plan is to supply a passenger terminal by means of a subway running from one end of the city to another, to let the freight terminals be located outside the city, or in some part within the city that might be reached at comparatively small expense. With such a layout, it is the idea that such railroads as the Erie, the New York Central and the Pittsburgh, Shawmut & Northern would extend branches into the city.

"Pittsburgh has been for many years virtually within the grasp of the Pennsylvania system. Competition has been largely eliminated and the city has suffered much from arbitrary discrimination practiced against it."

A belt-line railway, proposed by F. F. Nicola, vice-president of the Pittsburgh Industrial Development Commission and an architect and real estate operator who has led in building up the aristocratic Schenley Farms section, doubtless would facilitate the distribution of the city's tremendous industrial traffic. This plan, which also enters into the administrative program, is based upon the peculiar topography of Pittsburgh which confines transportation and industry, with few exceptions, to the bottom lands along the rivers, putting a premium upon the value of this kind of land and thereby making industrial sites too high in cost for most prospective manufacturers.

A contemplated transportation improvement which had been successfully advocated, for the construction of two tunnels under the Monongahela River, suffered defeat late in March upon a technicality of law.

In authorizing the construction of the tunnels, the Board of Commissioners of

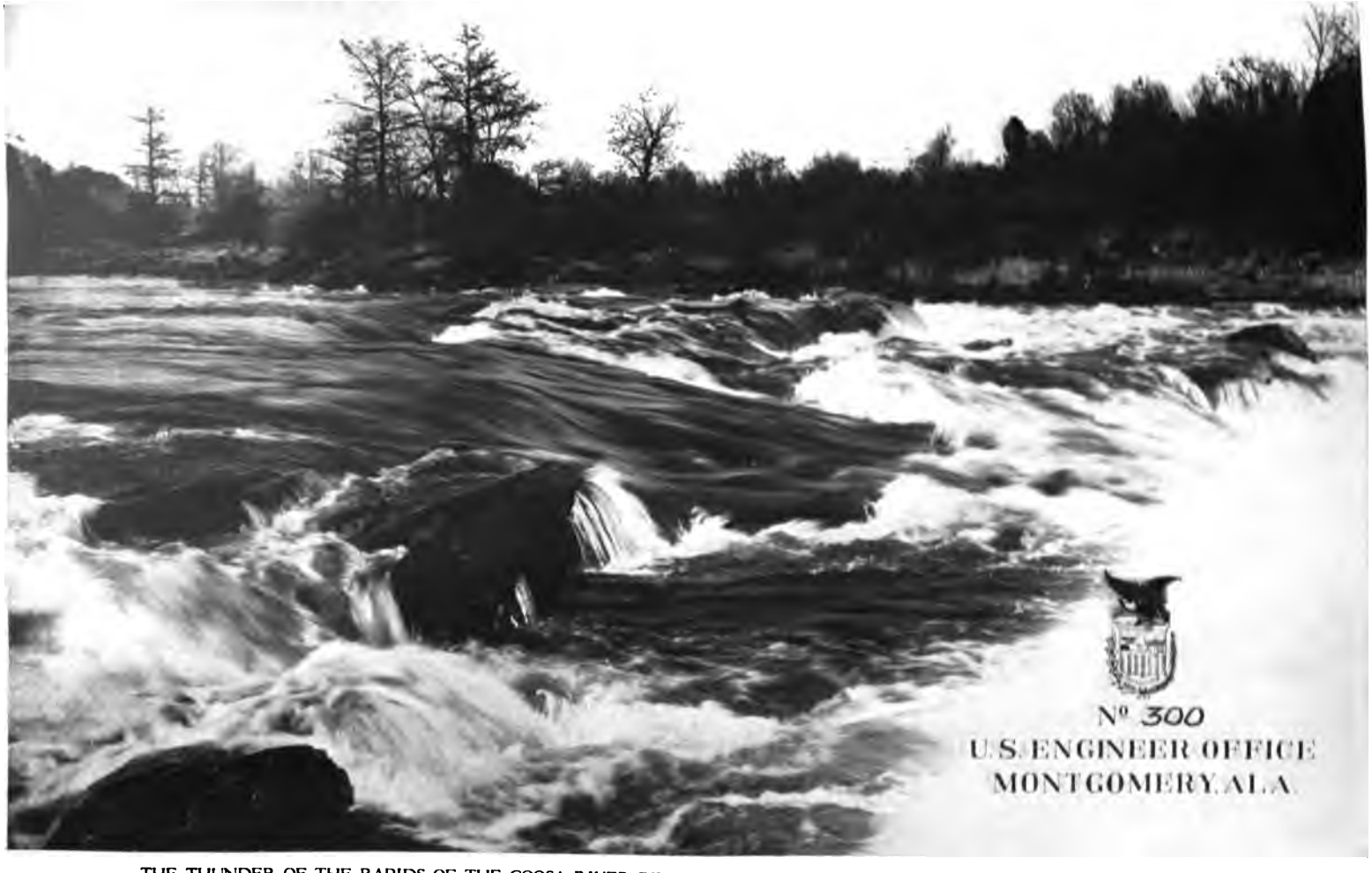
Allegheny County failed to comply with a law which required it to pass a resolution to the effect that the work was deemed expedient, and, accordingly, the Court of Quarter Sessions rendered a decision enjoining the commissioners from proceeding with the improvement. Efforts are being renewed to bring about the construction of these tunnels with the proper observance of legal requirements. In the interim, advantage is being taken of the situation by the advocates of a movement for the building of a bridge across the Ohio River to connect the North Side of Pittsburgh, the "Allegheny" of old, with McKee's Rocks. A steel span 1000 feet long, to accommodate street car, wagon and pedestrian traffic, is known to be favorably regarded by the War Department. The cost of such a structure would be $1,250,000. There being no highway bridge between the location selected and the Point, a distance of three miles upstream, the proposed span would form a desirable connection between the Woods' Run district of old Allegheny and the "Indian Mound" in McKee's Rocks, and would afford communication between manufacturing plants centering about both ends, that employ from 25,000 to 30,000 men, and it would open up 1500 acres of land adapted for manufacturing purposes.

Vitally related to the object of development of the navigation resources of the several waterways centering at Pittsburgh is the controversy now raging over the proposal to heighten elevation of eight bridges spanning the Allegheny River. Successive boards of engineer officers of the United States Army have reviewed evidence submitted to them by the river, coal and merchant interests of Pittsburgh, from which they have deduced the fact that the bridges at their present height form an unreasonable obstruction to navigation, and during the last administration recommendations were made by Brig.-Gen. W. H. Bixby and Colonels William T. Rossell and C. McD. Townsend, forming the latest board, that unequivocally favored raising the bridges.

These recommendations were overruled by former Secretary of War Jacob M. Dickinson, but in the last River and Harbor Act, signed March 4, the expenditure of $300,000 for Allegheny River improvements was made subject to the condition that no part should be disbursed until the Secretary of War "has received satisfactory assurances that the channel spans of the bridges forming unreasonable obstructions to the navigation of the Allegheny River at Pittsburgh will be modified as recommended by the board of engineer officers in a report dated November 23, 1910." So Pittsburgh grapples with her manifold problems, and the united ambition of her citizens is that she may come to utilize to the full the beauty and abundance of her natural advantages. Long has she sustained the sobriquet of "The Smoky City," but science and government are co-operating to forever dispel this murky influence.

There is every indication that when the skies above Pittsburgh shall have cleared for all time, a city of wondrous natural and artistic grace will be revealed.

MANY LEADING CITIZENS, HEADED BY COL. T. J. KEENAN, ARE AIDING THE MOVEMENT TO SAVE THE FORMER HOME OF THE COMPOSER OF "OLD BLACK JOE" AND "THE S'WANEE RIVER," WHOSE BIRTHPLACE WAS PITTSBURGH



THE THUNDER OF THE RAPIDS OF THE COOSA RIVER BESPEAKS THE POWER THAT THERE AWAITS THE HAND OF MAN

ALABAMA, A MODERN ELDORADO

By RICHMOND PEARSON HOBSON, *M. C.*

"FROM the standpoint of assembling raw materials for the world's greatest universal staples of clothing and construction, Alabama must be conceded the very first place in the United States and in the world at large," declares the Representative in Congress from the Sixth Alabama District, who here urges the establishment by law of a Federal Commission on Public Works and Conservation, or a bureau to adjust questions coming within that province as an adjunct of the Department of the Interior.

UP to the present time American industrial development has been chiefly confined to meeting requirements of the home market. This is largely due to the relatively undeveloped condition of the country and its natural resources, and the very rapid growth of the home market itself. It is partly due to the high protective tariff policy which, while it shuts out the industries of the world from the home market, also tends to exclude home industries from the world's markets. These conditions are now undergoing fundamental changes. American industries have assumed large proportions and are fast outgrowing the American market. To continue a steady natural growth they must now seek the markets of the world.

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The impending revision of the high protective tariff rates will encourage this expansion. It may be said that America's industry is now entering upon a second period of its history, when it must go out and win and hold the markets of the world in the face of the competition of the industries of all other nations standing within their entrenched position of present possession.

The first determined effort on the part of American industries will be inaugurated with the completion of the Panama Canal, and will have for its objective the markets of South America and of the Pacific. The outcome of the struggle for supremacy will depend upon two prime factors; first, cheapness of production of the world staples and, second, cheapness of transportation from the country of production to foreign markets. It is no depreciation of the other great industrial centers of America to say that both of these prime factors are destined to be realized along the banks of Alabama's waterways, which, as sources of both cheap power and cheap transportation, will insure American supremacy in the markets of the world.

Two factors enter into the question of cheapness of production, assuming always that the question of labor is adjustable. The first is the assembling of raw materials, and the second is the availability of power for their manufacture. The first and foremost world staple is clothing, for which the masses are dependent upon cotton.

It scarcely needs to be pointed out that Alabama is located almost in the center of the cotton area of the South, which produces over two-thirds of all the commercial cotton of the world. The chief competitors of southern mills are to-day the mills of New England and the mills of Europe, both of which are compelled to bring their raw cotton from the South by long stages of transportation by rail or by rail and water combined. Therefore, other conditions being equal, the South must necessarily become the world's center for the production of cotton goods.

Construction materials, chiefly iron and cement, compose the second class of great world staples. Of these, iron will be the center of competition; for its production two principal raw materials are necessary, ore deposits and coal. These two elements of raw material, together with the limestone for fluxing, are found side by side

Birmingham View Co.

BIRMINGHAM'S LIGHTS STUDDING THE DARKNESS

THE GREAT ALABAMA INDUSTRIAL CENTER GLOWS WITH THE LIGHT OF ELECTRICITY SUPPLIED BY WATER POWER FROM NEARBY RIVERS

in the Alabama region, and are separated by hundreds of miles in all other competitive sections.

It is not necessary to describe the vast iron deposits of Alabama and the cheapness with which they can be mined. There is no parallel in the world, except in distant inland sections, like that of Lake Superior, whence the ore has to be transported long distances to the centers of industry.

Thus, from the standpoint of assembling raw materials for the world's greatest universal staples of clothing and construction, Alabama must be conceded the very first place in the United States and in the world at large.

The second factor in cheapness of production is the availability of power. Power may be divided into two classes: that derived from oil, coal or gas, and that derived from water power. The coal deposits of Alabama are among the largest and most accessible of all the coal deposits of the world, covering an area of over 4,000 square miles. The thickness of the coal ranges from 50 feet down; over 300 square miles have an available thickness of 30 feet or more; 350 square miles a thickness of 20 to 30 feet; 600 square miles a thickness of 10 to 20 feet; and large areas from 2 to 10 feet.

It is difficult to estimate the total available tonnage, but it can be stated to exceed 75,000,000,000 tons, of which less than one-half of one per cent. has been mined. Nearly all of this coal is of good coking quality. Specimens from the mines of Belle Ellen, Blocton and Pratt City, which have been analyzed by the Government, show an unusually large percentage of fixed carbon, with an unusually small percentage of ash, moisture, sulphur and other impurities, giving an extraordinarily high calorific rating, exceeding 14,000 British thermal units. Natural gas of an unusually high grade is found in great volume in this region, and every indication points to oil deposits also. Therefore, in these sources of power Alabama cannot be put in the second place to any other section.

In the resource of water power this region stands almost unparalleled in the

whole world. Mussel Shoals alone will supply not less than 100,000 horse-power, and the tributaries of the Tennessee above Mussel Shoals will probably furnish as much more. *Rivalling the Tennessee is the Coosa River, with 200,000 horse-power available. Next to these two come the water powers of the Warrior River, notably that planned for Lock 17, a short distance from Birmingham. With high-potential transmission, the water powers of the Tennessee, Coosa and Warrior are available for this whole region.

Taking account of both sources of power, which react advantageously on each other, this region stands without rival anywhere in the world, while the great raw materials are on the spot. Coal and water power are located in the cotton field and alongside the iron mine, a combination which has never been even approximated, and apparently never can be approximated, anywhere else. Cheap water transportation for ore on the Great Lakes can never overcome Alabama's inherent advantage. Both in assembling the raw materials and in supplying the power for their manufacture—the two factors in cheapness of production—the waterway region of Alabama stands supreme. I do not think that anyone who looks into the question will seriously challenge my statement that the conditions for ultimate cheapness of production for the great world staples place Alabama in a class by itself and unparalleled anywhere in the world.

The other great factor in winning the markets of the whole world will be cheapness of transportation from the centers of production to tidewater, and from tidewater to the markets of the world. In the fierce competition that will result the inherent advantages of water transportation over land transportation will be a determining factor; water transportation uses a level, almost frictionless fluid of great weight, and does not involve the comparatively heavy friction of solids on solids. For heavy transportation, therefore, water must always offer an inherent advantage.

The question of transportation from

*These figures, which are much smaller than published estimates, are those given by the U. S. Engineers for a dependable power throughout the year. The available power can be greatly increased by the use of reservoirs.

Overbey's Studio

WHEN ALL MOBILE MAKES MERRY—AT MARDI GRAS

THE CARNIVAL SPIRIT TAKES A STRONG HOLD UPON THE FAIR CITY ON THE GULF

tidewater to the markets of the world gives a great advantage to the Alabama section. With the completion of the Panama Canal the center of distribution of world staples will soon shift from the English Channel to the Caribbean Sea. Alabama will thus have tidewater outlets closer to the center of distribution than any other competitive center of production. Her advantage, however, will come in the cheapness of transportation from her centers of production to tidewater. There is no comparison with those distant inland centers which at present supply the home market. The Alabama centers are located close to tidewater to begin with, and will have the benefit of water transportation for even the short distance that intervenes. The Alabama, Tombigbee, Warrior and Coosa Rivers will insure slack-water navigation straight from the centers of production to tidewater. Next to these will be the Tennessee River, which should have an outlet to the Gulf by way of one of the three rivers mentioned—the Tombigbee, Warrior or Coosa—as well as by the Mississippi.

The development of navigation on the Warrior River is now largely an accomplished fact. The Federal Government has appropriated almost $9,000,000 toward this work, and 16 locks have been completed. With the completion of Lock 17, work on which is already begun, slack-water navigation will be extended to within a few miles of Birmingham, and I hope that, before long, it will reach the city itself. The Birmingham region may now start upon the realization of its destiny, which is to make supreme its reign over the foreign commerce of the world.

The development of the Coosa River is still backward, but it is now receiving the attention of the Government. The development of the Tennessee River has long been under consideration. This year's Rivers and Harbors bill carries an appropriation of $1,105,000 for the Tennessee River and $1,338,500 for the Black Warrior, Warrior and Tombigbee Rivers.

Since these waterways are so intimately associated with the future of American supremacy in the world's markets, they should receive full and immediate consideration by Congress. The Panama Canal is so near completion that the world's struggle for the markets of South America and the Pacific is almost upon us. Our present largest centers of industry —the Pittsburgh-Cleveland-Chicago re-

THE ONLY ONE OF ITS KIND IN THE UNITED STATES

WHARF AND WAREHOUSE OWNED AND OPERATED BY THE CITY OF MONTGOMERY, ALA. THE "KANGAROO PLATFORM" RISES AND FALLS WITH THE STAGE OF THE RIVER AND THE CARS ARE OPERATED BY ELECTRICITY

EVERY LOCK ON THE COOSA RIVER MARKS A NEW STAGE OF NATURAL BEAUTY

THE VISTA FROM THIS POINT SHOWS A REACH OF WATER, ROLLING HILLS TOPPED WITH EVERGREEN—IT IS A VIEW TYPICAL OF PICTURESQUE AMERICA

gion—are advantageously located for the home market, but it is of the utmost national importance that the Alabama centers should be speedily developed as we enter the struggle for the markets of the world.

It is an interesting fact that the development of navigation on all three of these great streams goes hand in hand with the development of vast water powers. Their development, therefore, should be undertaken along the lines of a wise, permanent, national policy, comprising both navigation and water power, and the Alabama waterways should bring about the standardization of our national policy for navigable streams.

The recent appropriation for Lock 17 on the Warrior River provides for the acquisition of a site for future development of power, and secures to the Government the full title and riparian rights in that locality. Henceforward it would be a wise policy for the Government to secure such title and riparian rights, and provide sites for power plants in all cases where the development of large power is involved in improvements for navigation.

In view of the fact that the whole question is rapidly becoming acute in all sections of the country, the time is ripe for establishing the principles under which the States should act in the case of waterways not navigable, and under which the Federal Government should act in the case of navigable streams; also, under which the Federal Government and States should jointly act in the latter case, and under which private individuals should act in conjunction

CANAL AT MUSSEL SHOALS ON THE TENNESSEE RIVER

UNIVERSITY OF ALABAMA

SOME OF THE BUILDINGS AROUND THE QUADRANGLE. THE CAMPUS OVERLOOKS TUSCALOOSA AND THE WARRIOR VALLEY

with one or the other or both of these governments. It is time to establish by law a Federal Commission on Public Works and Conservation, or, at least, a bureau on these questions in the Department of the Interior.

Any permanent policy should take account of the following principles:

First, it is not wise for the Government to go into the system of production or the system of distribution, but it should confine itself chiefly to the system of regulation, such differentiation being in line with the evolution of all living organisms of a high type. It is when the Government is free from the burdens of production and distribution proper that it can best fulfill the important and vital function of regulation.

Second, it should be borne in mind that water, like natural light and air, belongs to the people at large and should not be monopolized for individual benefit. Every policy of common law or statute law should insure the ultimate public good, and at the same time protect the people in their property rights.

And third, the Federal Government, without violating the principle first laid down, can and should encourage the development of natural resources, particularly the water powers which are so intimately associated with the development of navigation. We should establish a uniform policy of cooperation between the Federal Government, the State government and corporations and individuals, in this development, the general principle being government aid with reasonable regulation, and with the refunding, from the earnings of the improvements, of the original expenditure. I am inclined to think that to enable the people to proceed without having to wait upon large corporations, we could very properly provide a large Federal fund for cooperating in power development on navigable streams along the general lines of the irrigation fund, which would never be exhausted and would be available for projects in the order of their importance as recommended by proper government officers, or by the bureau or commission referred to, after its establishment.

I cannot help adding a word of recommendation to young men seeking an outlet for their energies to go to Alabama and locate along these three great streams

SMITH HALL—GEOLOGICAL MUSEUM
REMARKABLY COMPLETE IS THE REPRESENTATION OF AMERICANA IN THE STATE MUSEUM AT THE UNIVERSITY AT TUSCALOOSA

within a reasonable distance of their water power and navigation, because the attention of the whole country and the whole world will soon be directed to this region, following the completion of the Panama Canal. When once the world's attention is so directed, the unparalleled advantages for cheap production through the proximity of raw materials in vast abundance and of coal and water power in unlimited store, lying close to tidewater and with water transportation all the way to the markets of the world, will cause a development of industry and an enhancement of values so rapid that even the records of growth in the Pittsburgh, Cleveland and Chicago sections will be far surpassed. In the matter of land values for farming purposes there will be a similar advance. Lands capable of the highest forms of production are now obtainable for a "song"—lands suitable not only for the raising of cotton, but also for corn, forage, live stock, including hogs and cattle, poultry, dairy products, garden truck and fruits.

I would not undertake to name all of the promising points for location and investment, for almost all parts of Alabama would be good for investment at present values, but along the three waterways I might mention, as now ready for young men's energy, the following: near the Tennessee River, Guntersville, Huntsville, Decatur, Athens, Florence, Sheffield and Tuscumbia; along the Coosa and Alabama, Gadsden, Anniston, Attalla, Talladega, Childersburg, Wetumpka, Tallassee, Montgomery and Selma; and along the Warrior and Tombigbee Rivers, Birmingham, Bessemer, Jasper, Cordova, Tuscaloosa, Eutaw, Demopolis and Mobile.

Some day I expect to see the banks of the Tennessee River one solid city for seventy-five miles up and down on both sides, in the vicinity of Mussel Shoals. Likewise, I expect to see Gadsden the center of industry for many miles around. I expect to see the region from Birmingham to Jasper and from Birmingham to Tuscaloosa built up like the region about Pittsburgh, while prosperous cities will spring up at short intervals all the way down the Warrior River. I expect some day to see Mobile the greatest shipping port in America, since it is the natural outlet to tidewater of the Alabama region, which is destined to give America the commercial supremacy of the world.

"WOERDEN, * * * ONCE COVETED BY HOLLAND'S COUNTS AND UTRECHT'S BISHOPS

Peaceful and pleasant it lies in the midst of smiling meadows. Bonifacius, the great missionary bishop, lived here for seven years before he went to Dokkum to die at the hands of Frisians, and Woerden, among all her grim stories, and they are many and terrible, keeps his memory green.

THE ELUSIVE DUTCH RHINE

By FLORENCE CRAIG ALBRECHT

Illustrated from photographs by EMIL POOLE ALBRECHT

"THE Rhine—the Old Rhine it is now—flows on from Utrecht even more slowly through the flat meadows which mark the western end of the province and cover all of Holland. Just beyond the boundary it cuts through Woerden, a pretty little ancient town once greedily coveted by Holland's counts and Utrecht's bishops." Thus does this gifted writer pursue her quest of the final outlet of the river of glorious tradition, with an artist's observation of the manifold beauties of the country passed.

IN THREE PARTS—PART II

WE came to Arnhem in the late afternoon of a market day. A mellow light enveloped its stately houses, swirled about its church towers, glimmered in the dusky market-place, made a golden glory of the river. Arnhem at that hour was picturesque, even poetic. At other times one is much more conscious of wealth, luxury, leisure than of poetry. The show-city of the Netherlands she is, residence of retired merchant princes graciously expending their fortunes acquired in far-away Sumatra or near-by Rotterdam. The dusky faces of their Javanese servants give a curious Oriental note to the modern city, but, indeed, in every town in the Netherlands there is something in architecture, in pottery, in the pattern of ancient silver or the clasp of a coral necklace which recalls the great Dutch trading companies and their supremacy on Eastern seas.

Rolfe

Upon this warm afternoon of midsummer, however, Arnhem's prosperity is less oppressive; her wide, well-paved streets are scrupulously clean but empty, the great houses are shuttered, their owners have gone with their dark-skinned servants to the rose-wreathed villas on the hills or to Scheveningen's sea-wall. The theatres are closed, the music-halls silent, the "honk" of an automobile, the "chug-chug" of a motor-boat are heard but rarely: there is nothing to remind one that, amid its neighbors, Arnhem is the gayest of the gay.

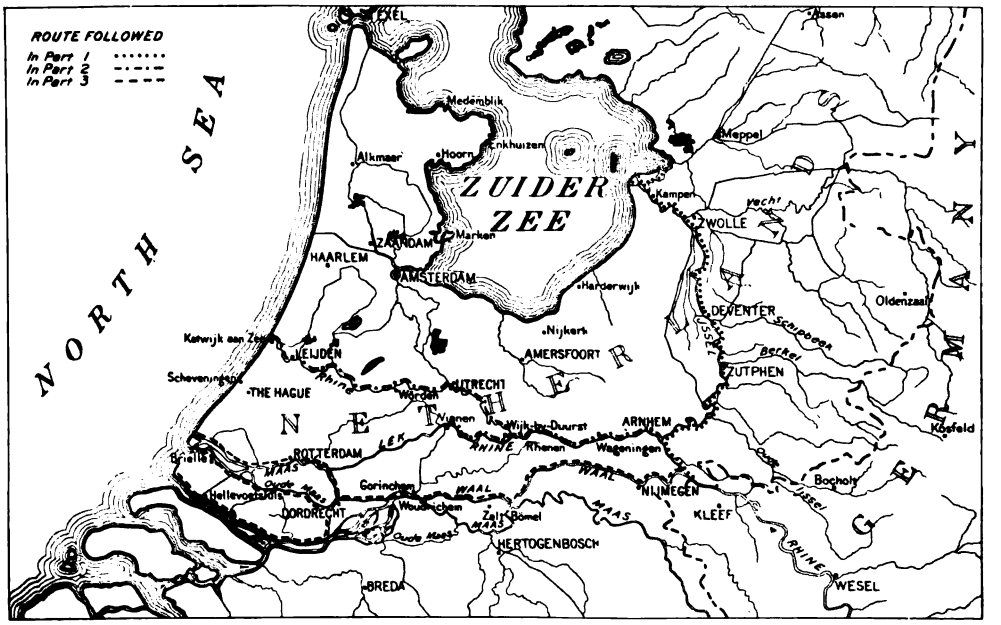
The market-people are methodically dismantling their booths and loading their carts for the homeward journey. Their placid faces, their leisurely movements proclaim content with the day's business and serene confidence in the long summer twilight that shall light them home. Like Arnhem, they look prosperous, well-fed, contented with themselves and all that concerns them; the traveller has no anxieties about them, nor great interest.

But Arnhem has not always basked thus in cradling golden light. The capital of Guelderland, the chosen residence of its ever-warring dukes, it proudly claimed the province's motto as its own:

Hoog van Moed,
Klein van Goed,
Een Zward in de Hand
Is t' wapen van Gelderland.
(High in courage,
Small in wealth,
A sword in the hand
Is the shield of Guelderland.)

and played its part in many a hard-won fight.

Grown rich, peaceful and prosperous, it has forgotten all that, torn down the ancient dwellings that might recall her days of poverty and strife, buried her memories for good or ill. She will tell you none of them, you must dig them up for yourself. She may have been a Roman camp—almost all Rhine towns claim that—but there are no Roman remains here. In fact there is nothing older than seven



THE RHINE—A RIVER OF MANY MOUTHS

Not less mysterious than the famous Humboldt River in our own Nevada is the storied Rhine in its final outflow to the North Sea. We know that the Humboldt, after its sulky, sluggish flow past Winnemucca, makes a cowardly surrender to the arid desertland and sinks into the earth whence it sprang. But "The Elusive Dutch Rhine" shames its noble Teutonic parentage and slinks from the sight of man to find any number of doubtful outlets to the sea.

centuries, which, for America, is indeed ancient but, for the Rhine, is young. The Sabelpoort, last of her gates, stands at one end of the market-place, interesting but far less beautiful than those we saw at Kampen and Zwolle. Across the great square the stately church of St. Eusebius presents much the same front to the world that it did when Guelderland's last Duke was buried there four centuries ago. Of brick, weathered to a beautiful purplish tone, and of sandstone too recently and thoroughly restored, the church is pleasant to the eye, while in its tall graceful tower swing bells whose chime delights the ear. "Ach ja!" says our Dutch friend "by Hemony." We, of America, know little of bells and bell-makers, but all the Lowlands, the home of silvery chimes, can tell you about the brothers Hemony, who, in the seventeenth century, cast unequalled bells that ring yet sweet and true.

East of the church is the Stadhuis—or so Arnhem has called it for almost a century—but for us, and for many another, it is still the Duivelshuis, the palace of Maarten van Rossum, Lord of Ponderoy, general under Duke Charles of Gueldres. An unscrupulous soldier of fortune always, carrying pillage and death across the Netherlands, he yet was a patron of architecture who built fine houses in fair cities upon his devastating route. This one at Arnhem, where indeed he lived very seldom, newly restored until it looks a thing of yesterday, earned its popular title not, as one might suppose, from the harsh soldier himself, but from the caryatides with which his grotesque fancy adorned it. They look mightily uncomfortable—about as much so as all of Maarten van Rossum's neighbors.

Another ancient church, a few relics in the museum, that is all that lingers of Arnhem's ancient memories. There are comfortable modern hotels where one may live in luxury; there are delightful excursions by carriage or motor-car through the pretty low hills and forests beyond; there are hospitable villas and parks and gardens whose gates open readily to strangers and "points of view" a-plenty, whence one can see the rippling golden river, a chateau or two, a picturesque church; there are luxurious boats for merry water-parties; but the wind at Arnhem, soft as it is, rose-scented, whispers no stirring history, no romance; the

"THE DUIVELSHUIS, THE PALACE OF THAT MAARKEN-VON-ROSSUM WHO CARRIED PILLAGE AND DEATH OVER THE NETHERLANDS"

Neder-Rijn as it ripples its lullaby by Arnhem quays has quite forgotten the Lorelei's song. It is our own fault or misfortune perhaps, but Arnhem can never long hold us; in less than a day we are on our way to Wageningen and Rhenen.

If tired of boats one may go to Wageningen by tramcar, an indifferent car which meanders methodically through the chain of summer villages, the endless rows of rose-wreathed houses, of greenest lawns and pebbliest walks and densest trees that crown the low hills which here line the river. From it the passenger has frequent glimpses of intimate family life as the car skirts a window or rounds a rustic arbor where Mynheer, Mevrouw and their guests sit about the coffee-urn. One feels embarrassed, as if one had peeped through a keyhole, but there is no need. Mynheer smokes his long pipe or munches his strawberry sandwich, Mevrouw her Arnhem *meisje** placidly; the tramcar and its occupants are accepted as phlegmatically as a passing shower. Some things must be—as mosquitoes—or tourists.

Wageningen is very ancient but, like Arnhem, does not look it. In fact she is so much interested in her present, her new schools, her forests, the sandslopes where she sits high above the river, that she has no time to consider her past. Of grim war-stories she has plenty, but she tells them reluctantly and, as we were but lukewarm listeners to her chant of self-praise, we soon parted company with mutual content.

Now Rhenen is a vastly different place. Unfortunately we came to it on a day of incessant rain. The beautiful tall tower of St. Kunera's church, ordinarily a landmark to boatmen far up and down the Neder-Rijn, emerged from the clouds reluctantly only as we came to its foot, and the smoke wreaths from the chimneys of the little town that lay hidden behind the green wall blended with the swirls of mist about it, draping it in a succession of silvery veils. The luxuriant green meadows between river and dijk were spongy with water; within, the little town dripped and trickled with rain; nevertheless it was picturesque in its pearly grayness with, here and there, a scarlet flower or a blue blouse to touch color to the monotone.

Rhenen is quaint and old-fashioned and contented, guiltless of modern improvements and of modern unrest. It has time for the stranger, who comes indeed but

"THE INNER HARBOR, ARNHEM: THERE IS MUCH LIFE AND MOVEMENT UPON HER WHOLE WATERFRONT"

*Arnhem's especial confection.

rarely, and memory, the memory of the very old for the days when they were young. It can tell many tales, but chiefest among them is the one concerning her church tower—history Rhenen calls it—and possibly with truth. But since a cold-hearted Frenchman proved that the Maid of Orleans never was burned at Rouen but "married and lived happily ever after," one grows doubtful of history and legend and of martyrs generally.

"RHENEN: THE BEAUTIFUL TALL TOWER OF ST. KUNERA'S CHURCH EMERGED FROM THE CLOUDS RELUCTANTLY"

Vondel, Holland's great poet, sang Rhenen's story, and to those who read Dutch, I commend the original. For the others the tale runs, baldly and briefly, thus: Kunera, the King of the Orkneys' daughter, and, of course, a princess lovely beyond compare, followed Ursula and her eleven thousand virgins up the Rhine toward Rome. Now, I shall not enter upon the story of that pilgrimage here. I know it has doubters; what good story has not? Perhaps the ancient text was read incorrectly; perhaps the maidens were but two, not thousands; perhaps the bones were those of men, of sheep, not girls; perhaps —but all that belongs to the German Rhine and to Cologne.

No one disputes that there were at least two maidens and, if Cologne is sure of Ursula, Rhenen is equally certain of Kunera. In the slaughter which overtook them Kunera was captured by the heathen warrior, Prince Haymo, and he, enraptured by her lovely face, forebore to kill, but carried her off to Haymostein, near Rhenen. There she had the choice of marrying him or of remaining a prisoner for life. Kunera declined both propositions, flung herself from her tower window and died on the court-yard stones. Whether Haymo, repentant, gathered her bones and enshrined them, whether he became a Christian, where and how he died, the story does not tell, but it ought. At Cologne they would have rounded it out perfectly, but the lower Rijn has no imagination. Kunera had been a thousand years dead when this lovely tower rose in her memory.

We are going down the river from Rhenen to Wijk bij-Duurstede. The current is running swiftly and the steamer slips past the pier, turns and laboriously puffs upstream again to make its landing. As we wait we can watch the queer, crab-like ferry-boat which is sidling across the river towards us with a flock of sheep that are to be our fellow-passengers. This ferry uses the current for all propelling power; up and down stream you will find its like again and again. Anchored securely in mid-stream is a heavy chain which a series of three or four small boats keeps afloat. The flat, square-ended ferry-boat, set on at right angles to the free end of this chain, swings upon it from shore to shore like a square bob on a flexible pendulum rod. The ferryman pushes off at such angle as best suits the current, and "lets it do the rest." It is amazing how swiftly the awkward boat moves. One realizes what this river must be in time of spring-floods, and the pretty green banks, which increase in height as the hills flatten down beyond Rhenen, command more respect and attention.

Besides the two score sheep which are our constant companions, we have horses, cows, pigs, coming and going more or less reluctantly at every port. There is nothing much funnier for the disinterested observer than a tussle with a refractory

"A FERRYBOAT ON THE RIJN NEAR RHENEN; UP AND DOWN STREAM YOU WILL FIND ITS LIKE"

pig; the whole crew, from captain and purser to engineer-stoker, and all the second-class passengers take a hand. It is the perquisite of a first-class passage to look on. Arnhem would have stared at us aghast or not noticed us at all, arriving in such company. She is new (comparatively) and consequently over-careful of appearances. Wijk—just as aristocratic in her way, which is that of a British dowager sublimely conscious that she is she and indifferent to all else—made us just as calmly welcome as she would if we came on foot or in a palatial yacht; she is neither elated nor depressed by our advent.

Here at Wijk the river branches once again, sending out the Kromme Rijn northward by Utrecht to Leiden and Katwijk, while the other and stronger arm goes off past Vianen and Vreeswijk to become the Lek at Schoonhoven, and eventually reach the Maas and Rotterdam. In earlier days the Kromme Rijn was the main stream, the true continuation of the river, and freight-boats from the upper Rhine came down to turn here at Wijk toward Utrecht and Leiden. But the river-mouth at Katwijk silted up, the river became unnavigable, the tide of trade turned from the Neder-Rijn to the Waal, the Rhine's southern branch that we left beyond Arnhem, but to which we must return. Shall we follow now the Lek or the Kromme Rijn?

The Lek, once a weak, wavering Rhine arm, is to-day a great river, bound at Vreeswijk locks to the great Amsterdamer canal. Is it possible that some drops of Rhine water filter through here to reach the Venice of the North? If we begin to follow now every contributing current we shall be involved in a labyrinth of waterways and our journey will never end. The engineer will wish to see the great Vreeswjk locks, the boat-bridge between the towns; the artist will prefer Vianen, the tiny old picturesque town of the Brederode, older perhaps than Wijk. Schoonhoven, too, a border town between Utrecht province and Holland and often stoutly contested, beckons invitingly, but we will resist the call to-day and follow the name as we elected.

But before we go let us look at Wijk for a little. An old castle (the Dorestadum of the Romans, hence Wijk's present name) is here, and a church with huge unfinished tower; a maze of winding streets, of low-gabled houses, whose windows are screened by close-clipped lindens crowding jealously close to the lace curtains, upon the roofs grave-eyed storks solemnly regarding the strangers. There is nothing to suggest war or war's alarms, yet Wijk has had them in plenty. Romans built the first castle here; Kasteel, Wijk calls it. Frank and Fries fought for it, Louis the Pious gave it to Heriold, King of the Danes, as a reward for Christian baptism. The Normans held it next and then a succession of nobles wrested it in turn from each other; for

"THE FERRY AT RHENEN: THE FLAT, SQUARE-ENDED BOAT THAT SWINGS AT RIGHT ANGLES TO THE END OF THIS CHAIN"

"ON THE WEERD-SINGEL AT UTRECHT"

PART OF THE OLD MOAT NOW TURNED INTO A CANAL — SO ANCIENT HOLLAND COMBINES THE PICTURESQUE AND THE PRACTICAL IN THE UTILIZATION OF THE WATERWAYS THAT HAVE CONTRIBUTED TO HER PROSPERITY

"UTRECHT, EVER-CHARMING"

"EVERY TRAVELLER TO THE NETHERLANDS KNOWS THE OLD EPISCOPAL CITY, WITH THE TALL, IMPRESSIVE TOWER AND THE BEAUTIFUL BELLS, THE DEEP CANALS WITH THEIR DOUBLE QUAYS FRINGED BY HIGH GRAVE HOUSES."

"WOERDEN, A PRETTY LITTLE ACTIVE TOWN WITH ITS CLEAN STREETS AND ROWS OF TINY HOUSES"

two hundred years the Bishop of Utrecht claimed it and, with the province, they gave it in 1528 to Charles V. Since then Wijk has been one of those happy towns that has no history.

The days of her glory were those of her Bishops. They restored the castle, built the great church of St. Johannes-de-Dooper (John the Baptist) and began its tower. Ann Radcliffe, journeying by waterways across the Netherlands a century ago, writes of the "shattered tower of this church, a monument of the desolation spread by the Spaniards." The Spaniards have enough on their shoulders; don't let us add the church tower. The Bishops' money gave out, a less picturesque but quite usual story. Between church and castle there are two paths, one an avenue known as the Mazijk (music), whereon the bishop went to prayers preceded by music and song, the other underground. Now any reasonably imaginative town could have a story to tell of one or both of these roads, but Wijk has none, wherefore let us go on speedily to Utrecht, which in another way is as picturesque and vastly more entertaining. Yet we must not leave Wijk too abruptly. Ruisdael loved the old town and painted here often. A mill still stands where the Rijn and Lek divide, a mill yet known as the Rijn-en-Lek in memory of the one so frequently in his pictures. In the springtime when her fruit-trees blossom, in the summer when her cherries ripen, the old town is delicately lovely, even gay; for Kermis she awakens to an old-fashioned, somewhat clumsy merriment that is not, to us, attractive, but always she has a tinge of gray melancholy, a gentle dignity that adds to her charm.

The Kromme Rijn was a favorite waterway in the days of the *trekschuit*, the man-power boat of Netherland canals, but with the building of the locks at Vreeswjk, its popularity waned. No steamers to-day follow its tortuous course, no regular service is there of even most primitive kind. One may hire a small boat for the voyage or follow the river a-foot along the dike which walls it in. The steamers reach Utrecht by way of Vreeswjk locks and the canal, but did we choose them we might be tempted by the Holland Ijssel, a stream which should know nothing of the Rhine, although I doubt not more than a trace has filtered through.

From Utrecht's walls the stream goes on westward as the Old Rhine to Leiden and Katwijk, but one arm, the Vecht, runs northward to Muiden and the Zuyder Zee. Muiden's old castle is well worth a visit, but we have already listened to its stories, and as soon as Utrecht will permit it we shall go on with the Old Rhine to its end.

But Utrecht, although often visited, is ever charming. Every traveller to the Netherlands knows the old episcopal city with the tall impressive tower and the beautiful bells, the deep canals with their double quays fringed by high, grave houses, the picturesque bridges, the fragmentary cathedral, the once-great univer-

THE DEVIL'S STONE AT UTRECHT BESIDE THE OUDE GRACHT A HUGE BOULDER IS SECURELY CHAINED TO THE WALL

sity, the rows of mansions, each with its own gateway and bridge, the ring of beautiful parks and moats. The history of a city long so famous needs no repetition, but a story concerning a great boulder on the quay is worth repeating at the risk of being a twice-told tale. It is chained securely to the wall at the corner of Groot Eligensteeg beside the Oude Gracht. Archæologists name it a Keltic sacrificial stone or the table of an ancient dolmen, of similar origin to the Amersfoort Kei and the Scandinavian boulders in the Drenthe Hunnebedden. Utrecht can spin a better yarn than that.

Long ago it was the custom of Jonker Satan and Knecht Klaas (Master Satan and servant Klaas or Nicholas) to play tennis or hand-ball with this boulder across bridges and moats. Night after night for hours dwellers along the *gracht* would hear deep uncanny voices bellowing "Gooi, Baas!" (throw, boss!) "Vang, Klaas!" (Catch, Klaas!) until sleep became a thing unknown. They thought and they thought of ways to outwit the devil. They hid the stone again and again, but always he found it and the noise began. Finally they called upon the church for aid, which, of course, is what they should have done at first. A stout chain was taken to the priest, bedewed with holy water, consecrated by "bell, book and candle" and the stone fastened with it securely to the wall. That settled it. "Baas" and Klaas returned the following night, as usual. Utrecht, shivering under its feathers, in fear and hope, heard a wild shriek of rage; Satan had touched the sanctified stone and sprung howling into the *gracht*. Presumably the Rhine carried him far away, but Utrecht keeps the stone safely chained to this day.

The Rhine—the Old Rhine it is now—flows on from Utrecht ever more slowly through the flat meadows which mark the western end of the province and cover all of Holland. Just beyond the boundary it cuts through Woerden, a pretty little ancient town once greedily coveted by Holland's counts and Utrecht's bishops.

"THE TRUE HOLLAND LANDSCAPE"

"THE GREENEST OF FIELDS PLAIDED BY RIBBONS OF BLUE WATER, TENANTED BY BLACK-AND-WHITE COWS, DOTTED BY BROWN, THATCHED WINDMILLS—A LANDSCAPE BRIGHT IN COLOR, MONOTONOUS IN COMPOSITION, BATHED IN LIQUID LIGHT"

Woerden's *grachten* are arched by high-curved bridges quite Venetian in effect, especially if one sees them in the soft sunset light that transfigures prosaic details and mellows colors to a radiant whole. The Stadhuis is a quaint little building now some four centuries old, but "young for its age." Before it is a tall stone pillory with chains still suggestively dangling as if used but yesterday. Within are two Roman millstones, found in the Rhine and thought to have been used by Bonifacius in the defences he built for the

town. The great missionary bishop lived here for seven years before he went to the Dokkum to die at the hands of the Frisians, and Woerden, among all her grim stories, and they are many and terrible, keeps his memory green.

No reminder to-day is there of martyrs or sieges, no sound of war or of far-caught battle-cry. Peaceful and pleasant it lies in the midst of smiling meadows all cattle-dotted; many little boats sail to and from it, high piled with white meal-sacks, with glistening copper milk-cans; round about are sunshine and summer breeze.

"THE STAD-TIMMERHUIS, (OLD CITY WOOD HOUSE)"

Between it and Leiden are many little villages and illimitable green meadows stretching to a horizon broken only by a church spire or a towering mill. Here is the true Holland landscape, the greenest of fields plaided by ribbons of blue waters, tenanted by black-and-white cows, dotted by red-roofed, tree-screened farm houses and brown thatched windmills. It is ever the same and ever charming, a landscape bright in color, monotonous in composition, bathed in liquid light, arched by an ever-changing sky.

By Nieuwebrug, by Bodegraven, Koudekerk the Oude Rijn creeps on to Leiden. This is the stream denied all right to the name, yet the only one that carries it to the sea. It has grown very old and forgetful. It whispers no tales of romance, it chants no legends, it sings no ballads; it is half ashamed since its name has been discredited, and would not now tell what it heard once at Bingen, even if it remembered, which I doubt.

And Holland would not listen if it did. Legend does not thrive upon its sunny *polders*, and of war it has stories in plenty; every one of those tiny villages you pass can tell at least one. But what would you think of this, remembering Holland's contempt for fiction? Fort Wierekerschans, near Nieuwebrug, can store 200,000 tons of powder. No one doubts it. But—powder that has grown damp elsewhere immediately dries when re-stored here. No one pretends to answer your "why."

The river glides on quietly and enters Leiden near the Zijlpoort, spreading into a great busy haven where boats come and go unceasingly. It creeps thence westward through the city between rows of lindens and pretty red-roofed houses. Beyond the Burcht, the old tower at the town's heart, it is joined by a broader current, the Nieuwe Rijn (New Rhine), which left it just a little time ago to form a tiny island and comes up through the stateliest quarter of the city under the *Korenbeursbrug (the Cornmarket Bridge) and beside the weigh-house, to rejoin the elder stream. Thence they flow together through city and land to the sea, Schaffhausen's turbulent waters now close-locked and tamed by dikes and gates.

We may be prejudiced, but to our eyes the Rhine mirrors nothing prettier upon its long course than the roofs and towers of Leiden soaring from the lindens by its quays. On market morning, when scores of tiny boats, piled high with gay fruits and vegetables, float in on the current, and red-sailed *tjalcks* lie close to busy wharves, when the bells are ringing gaily from the Stadhuis tower and the Waag's tall doors are thrown wide to the white-jacketed porters, when a west wind kisses the water into a thousand frightened pouting little ripples and upon its breezes comes the salt tang of the sea, it is sweeter far to linger by Leiden's quays than to follow on to the river's end.

Yet its course from Leiden to Katwijk is also charming and too well-known to

*Illustrated in the previous issue.

demand a guide. And Katwijk itself—pretty little Katwijk with its shady streets filled with green coolness even in midsummer, its rows of tiny houses, spick and span as toys newly come from a Nuremburg factory, their windows, doorknobs and mirrors ("spies," the Dutch call these reflectors) shining from much polishing—has been a joy to artists for at least forty years.

Which is the prettier, Katwijk-aan-Rijn or Katwijk-aan-Zee—two villages, a half-hour's walk apart, bearing the same name, each charming in its way, but with no resemblance? When the fishing boats come in the shore city calls us, but when the beach is full of bath-wagons and sand-chairs Katwijk-binnen pleases us far more.

Imbedded in the sand dunes which protect Holland's low *polders* from the sea, the two little villages have reason to watch both tide and river anxiously in the time of floods. The summer-city, which sits placidly upon the dune-crest when the sea is like a mirror, when the *polder* waters are low and the sea-breeze soft as a baby's kiss, knows nothing of the battle with the waters which every springtime brings to the little towns.

It was Louis Napoleon who insisted upon the building of the great locks and sluices here by Katwijk-aan-Zee, the draining to the sea of all those waters which spread in unsalubrious lakes, pools and morass about Leiden. That once the Rhine poured a great portion of its waters into the ocean here there seems no reasonable doubt, and where the tides had choked the mouth with sand engineers set the great gates. When the wind blows strongly from the ocean, the waves hammer threateningly at them, the waters within shiver and threaten to overflow. When the outgoing tide carries away the sand the doors slowly open and let the flood to the sea.

And if the waters from the Rijnland *polder* become too decrepit, if their level remains lower than that of the sea at ebb, huge pumps lift the sluggish remnant from its bed to the ocean; the Rhine, at last, finds its way to the sea.

But is this truly the proud old Rhine at Katwijk? Many claim it is but *polder* water and call it the Katwijksche canal. Who knows? Let us go back to the first dividing of the waters there by Schenkenschans, where the Waal leaves the Rhine, and take up the southern trail.

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From the painting by John Collier, in the Tate Gallery

HENDRICK HUDSON CAST ADRIFT

With his young son and a few loyal members of his crew, the discoverer of the Hudson River was abandoned in an open boat by the mutineers of his ship, to perish in the icy expanse of Hudson's Bay, which, also, he had discovered. The surviving sailors afterward found their way out through Hudson Strait to the Atlantic without the aid of a compass, a fact which is pointed to as showing the ease with which the Strait may be navigated.

TO EUROPE VIA HUDSON'S BAY

By A STAFF WRITER

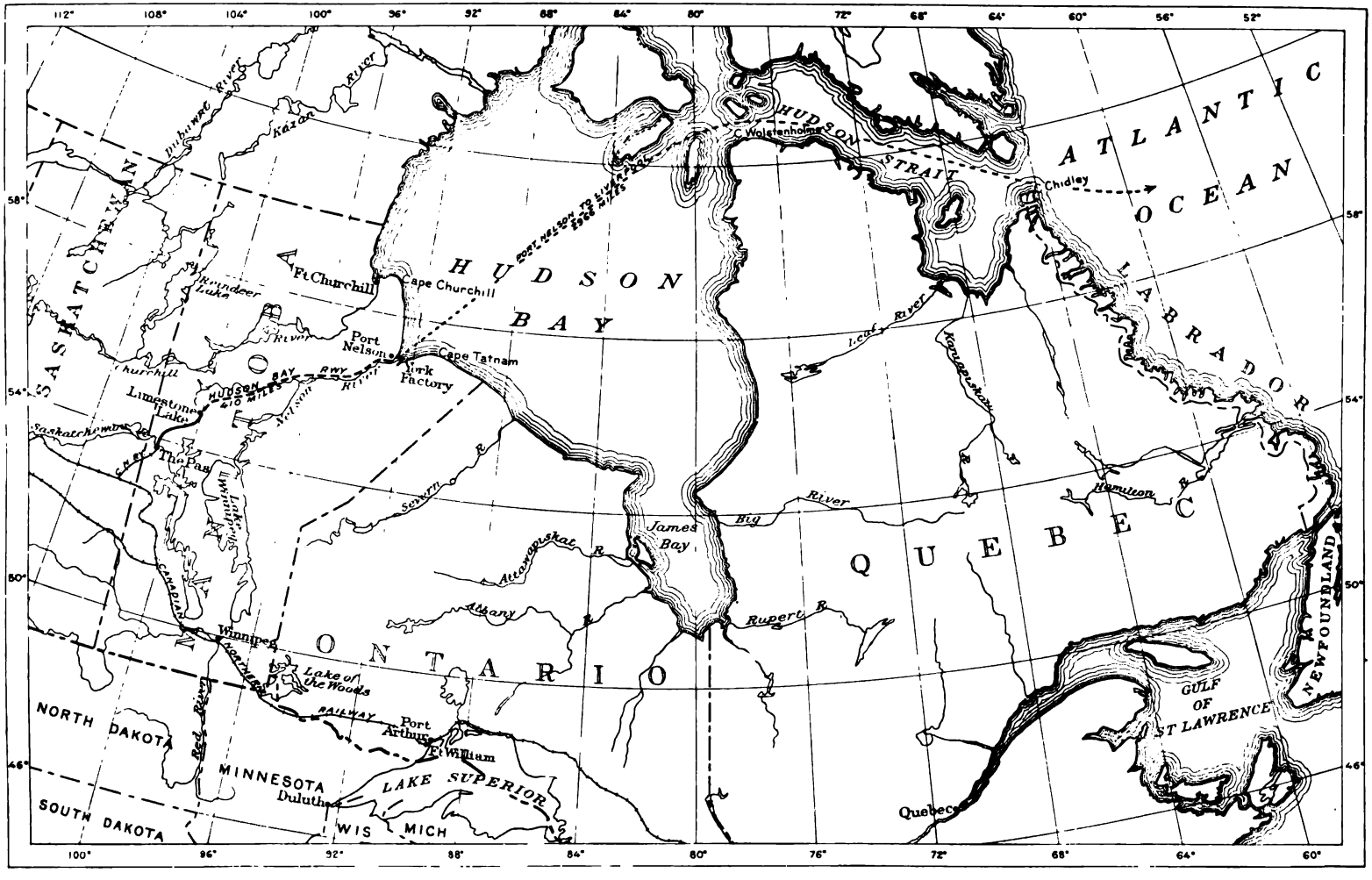
"IN THE working out of the Hudson's Bay project, and more especially in the economic necessity from which the magnificent undertaking springs, American energy, American initiative and American capital have been decidedly to the fore." The Canadian dream of half a century is to be realized in the railway that is rapidly being pushed to a terminus at Port Nelson, on Hudson's Bay, which the writer likens to some epic stroke of daring by heroes of Norse or Nibelung mythology.

WHILE the attention of the Americas is focussed upon that supreme event, the coming union of the waters of the Atlantic and the Pacific at Panama, work is progressing, quietly, but none the less indefatigably, upon the opening of a commercial highway over the northernmost land and water reaches of this hemisphere that, ultimately, must enter into competition with the Panama Canal. For a distance of seventy-five miles northward from the starting-point at The Pas, a Canadian Northern Railway station just east of the boundary line separating the provinces of Manitoba and Saskatchewan, the tracks of the Hudson Bay Railway have been laid. Yet more than this has been accomplished. The concrete piers of a bridge by which the road will span the Saskatchewan River have been built and the steel frame-work and approaches all but completed. The laying of trackage for the remainder of the 410 miles which are to constitute the total length of the road, and the erection of two more bridges to span the Nelson River at Manitou Rapids and at a second crossing of that waterway, henceforth will be interrupted only by winter snows, until trains are in operation between the two termini, and grain and cattle and the produce of the great Northwest are put aboard trans-Atlantic freighters at Port Nelson, on Hudson's Bay.

Like some epic stroke of daring by heroes of Norse or Nibelung mythology seems this first step toward the realization of the Canadian dream of half a century. In setting about to open up the Hudson's Bay route the people of the Dominion have undertaken to bend the most ferocious of the elements—to harness, as it were, the very rigors of the North to the will and pursuits of man. But when the railway shall have been completed, at a cost to the nation of $25,000,000, and a definite route of navigation shall have been established from the terminus of the road to Liverpool, by way of Hudson's Bay, Hudson Strait and the Atlantic, the vast grain areas of the Canadian Northwest will be brought within a hauling distance of the great English market of approximately 3500 miles, or from 1350 to 1800 miles less than the shortest existing rail-and-lake routes through the ports of Montreal and New York. Funds for the construction of the railway, the building of terminals and grain elevators and the creation of a first-class seaport at Port Nelson are voted from year to year by the Dominion Parliament, among the appropriations for public works.

In the working out of the Hudson's Bay project, and, more especially, in the economic necessity from which the magnificent undertaking springs, American energy, American initiative and American capital have decidedly been to the fore, as, indeed, they have been in the evolution of the latter-day Canadian overland transportation systems. A representative example of these is the Grand Trunk Pacific Railway, now building to a tide-water outlet on the Pacific coast at Prince Rupert, B. C., from which grain cargoes will be despatched to Europe by way of the Panama Canal.

Twenty years ago the limitless stretches of the Canadian Northwest embraced a population of less than eighty thousand, but toward the close of the century an influx of settlers and farmers from the neighboring States south of the international boundary line set in, and this has since developed such formidable growth and



MAP SHOWING COMPLETED PORTION AND ADOPTED ROUTE OF THE HUDSON BAY RAILWAY

constancy as to be viewed with concern in this country. The immense territory is now peopled by hundreds of thousands of native Americans and is studded with thriving cities and towns that approach, in the beauty and spaciousness of their streets and avenues and in the substantial character of their hotels, churches, banks, theaters and public buildings, the proudest centers of the United States.

The rich granary of Manitoba, Saskatchewan and Alberta, blessed by the wonderful "Chinook," that warm wind which offsets the rigors of climate normal to the latitude of those provinces and makes possible a yield of forty bushels to the acre and a growth of grass seven feet high, has been developed to its present state of cultivation in the main by American immigrants. By reason of its swelling numbers and by the nature of its agrarian accomplishments, which have come to tax the capacity and the resources of the present trans-continental railway lines north and south of the border, this "Yankee" population has attained to the status of a powerful factor in the political and commercial destinies of the Dominion. And the launching of the Hudson's Bay project is a direct result of the influence exerted by this element, as a political entity, in the Canadian Parliament.

Building operations upon the railway line were begun considerably in advance of determination by the Canadian Minister of Railways and Canals, the Honorable Frank Cochrane, of the ultimate tidewater outlet to be reached. Start was made upon a section of 250 miles from The Pas to Split Lake, and the selection of one of two routes from that point onward was left to the Minister, who last summer made a tour of inspection of the entire country to be traversed by the 250-mile section already contracted for and by the two proposed extensions to the Bay. One of these would terminate at Port Nelson, at the mouth of the Nelson River and 160 miles from Split Lake; the other at Fort Churchill, 255 miles from Split Lake and two degrees farther north than Port Nelson on the forbidding western shore of the Bay. Not until the first blasts of snow-laden wind, heralding the approach of the winter just closed, bore down upon the construction force, was the final decision of Minister Cochrane in favor of the route to Port Nelson announced and the contract for the total length of the road let to J. D. McArthur. The work of construction is being pushed to completion by an army of engineers under the direction of John Armstrong, chief engineer of the Hudson Bay Railway, who is immediately responsible to the Deputy Minister of Railways and Canals.

Over a trackless wilderness of stunted forest growth and morass, and creeks which broaden into extensive lakes, must roadbed and trestle be constructed to the townsite proposed for Port Nelson, on the clayey, bluff-protected north bank of the Nelson River, near the point where the waters of that stream enter Hudson's Bay. Where now the silence of this wasteland is broken only by the cry of marshbirds and the cold plash of swift-running rivers, the shriek of giant locomotives and the groan of heavy-laden freight cars will soon signalize the onward march of civilization into the hitherto uninhabited territory.

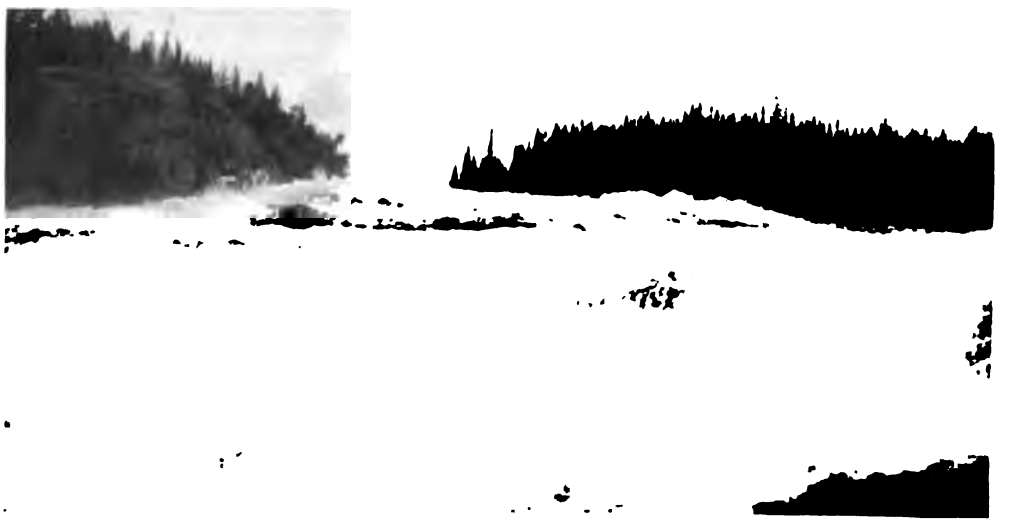
Unlike the railways operating in more temperate latitudes, the Hudson Bay Railway can be operated to its capacity for only two months, to a lessened extent for possibly three months, and still less for the remainder of the year. But during the interval in which it can be operated, the volume and importance of its dependable traffic dictate that it be operated to the maximum limit of its capacity—dictate that it be literally overworked.

In addition to the initial outlay of $25,000,000 for the construction of the road, the sum of $9,000,000 is to be expended for the equipment of the line to accommodate a traffic which, at the height of the season, is expected to attain to thirty-two freight trains and one express train every working day. This, it is figured, is about the limit of capacity for a single-track railway 410 miles long. Sixteen of the thirty-two freight trains, running north, will be loaded and will represent an aggregate traffic for one month of 1,930,000 tons, or 64,000,000 bushels of wheat. From 135 to 140 ships —a veritable fleet—will be required to carry these enormous cargoes from Port Nelson to Liverpool over reaches of the sea that have ever been associated with the frozen Arctic.

CAPE CHIDLEY AND RUNWAY INTO HUDSON STRAIT

GRAIN-LADEN SHIPS, ON THEIR VOYAGES FROM PORT NELSON, WILL ROUND THIS AUSTERE NORTHERNMOST HEADLAND ON THE ATLANTIC COAST. HERE THE DANGERS TO NAVIGATION OF THE BAY GIVE WAY TO THE LESSER HAZARD OF THE OPEN OCEAN

The ultimate success of the Hudson Bay Railway, as a transportation medium, must in great measure depend upon the maintenance of a free passage over that part of the course of shipping extending from Port Nelson to the Atlantic entrance to Hudson Strait. Of the maritime distance of 2966 miles to be covered by the steamships that will connect with the railway, about 1250 miles lie in the fairly sheltered waters of Hudson's Bay and Hudson Strait. While work has been progressing upon the building of the railway, hydrographic surveys have been made in Hudson's Bay, under the direction of the Deputy Minister of the Canadian Naval Service, the Honorable G. J. Desbarats. As the first important step in this very necessary work efforts were concentrated upon the surveying of the



WHITE MUD FALLS, IN THE NELSON RIVER

MORE THAN 300,000 AVAILABLE HORSEPOWER IS PROVIDED BY THIS MAGNIFICENT CATARACT ON THE LINE OF THE RAILWAY, BUT ONE OF THE ABUNDANT PHYSICAL RESOURCES OF THE REGION

western shore of the Bay, off which, for six, seven and eight miles, there are known dangers to navigation. During the last season three separate corps were at work; one along the western shore, between Port Nelson and Fort Churchill, another in James Bay, and yet another securing information as to the variation of the magnetic needle.

Thus far the question of charting Hudson Strait has not been seriously taken up, because it is considered that there is water a-plenty there, and that the Strait is broad and deep enough to accommodate all manner of craft and an unlimited volume of shipping. The primary considera-

rounded by steamers upon their entrance to the Strait from Hudson's Bay. At the ocean entrance to the Strait is Cape Chidley, the northernmost point on the Atlantic coast of North America. There the division-line is drawn between the territory of Labrador, to the eastward, which is under Newfoundland jurisdiction, and the wild, little-explored plateau of Ungava, which lies between the Labrador boundary and the eastern shore of Hudson's Bay and has recently been included in the Province of Quebec.

In oral testimony before the Select Committee of the Dominion Senate during the session of 1906-7, Dr. Robert Bell, of

MAY IN THE HARBOR OF PORT NELSON

IN THIS MONTH THE ICE THAT HAS GRIPPED THE NELSON RIVER BREAKS UP AND FLOATS OUT TO THE BAY, AND THEREAFTER THE APPROACH TO THE PORT IS AS FREE AS THAT TO OLD QUEBEC

tion in the navigation of Hudson Strait is the question of ice, and this, of late, has been the subject of exhaustive study. Two cruisers were stationed there as late as the month of November, charged with the observation of conditions toward the close of navigation, as had been done through previous seasons.

Hudson Strait is five hundred statute miles in length and averages one hundred miles in width, and if Ungava Bay be regarded as part of the Strait, the width is 250 miles. Cape Wolstenholme marks the westerly extremity of the south bank, the shore of Ungava. Off that point, to the northwest, lies Digges Island, an arm of which, known as Cape Digges, is

the Geological Survey of Canada, registered it as his opinion that, as the Strait is never frozen over at any time, any more than the Atlantic, steamers could pass through even during the winter, although some inconvenience might then be experienced.

"I know of no more desirable piece of navigation in the world, excepting the middle of the ocean," he told the Committee. "Even a common sailor incapable of taking an astronomical observation, could sail through the Strait with perfect safety. This is precisely what Hendrick Hudson's men did, after putting him and his little son and part of his crew into an open boat and casting them adrift.

"There are no serious shoals in the route between Coates Island and Mansfield (Mansel) Island, in Hudson's Bay, nor through the Strait, out to the ocean, and the land is so high that even at night one can see the outlines of the hills against the sky. But an occasional light and a telegraph line connecting them would be useful. There is one island, Charles Island, with one hundred miles or more to the north of it in which to choose one's course."

The examination by the Select Committee of Director A. P. Low, of the Geological Survey, elicited the opinion that the Hudson's Bay route, when it is clear of ice, offers an even better passage for shipping than the St. Lawrence route out of Montreal and Quebec, which is nominally closed to navigation during the winter months.

A number of good harbors are afforded alike by the mainland shores of Hudson Strait and the several islands, although the exceptional currents and tides prevailing render the approach to some of these a test of navigating skill. One, known as Lake Harbor, on Big Island, is annually visited by the Scotch whaler, *Active*. This vessel lands a crew of miners to work in a mica mine which has been long in operation at that point and takes aboard almost the entire Akolingmuit tribe of Eskimos, to convey them to the hunting grounds of Fox Channel and Roes Welcome, in the north of Hudson's Bay, where the men are employed in the chase of whales and walrus.

A few miles inside of Cape Chidley, and sheltered from the severity of the Atlantic gales and sea by the protection of the tongue of land which separates the ocean from Ungava Bay, is Port Burwell. It is expected that this excellent harbor will be chosen for the establishment of the customs station wherefrom both inward- and outward-bound shipping will be regulated.

Decidedly a factor in the development of the project must be the wonderful natural resources of the area through which the railway will pass and of the coast territory which the connecting steamships will bring into touch with the busy marts of Europe. An impelling force must these prove to be in the ultimate peopling and settlement of the whole country about Hudson's Bay and Hudson Strait.

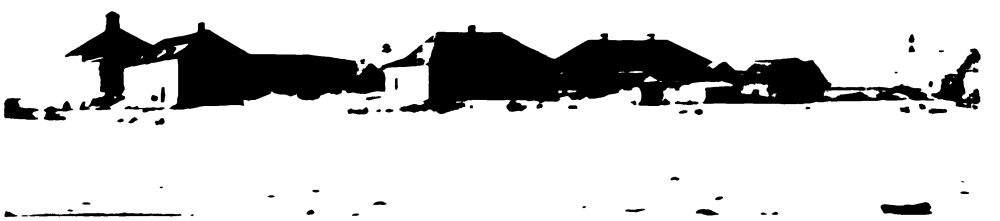
Although not a single road nor farm crossing has figured in the survey of the entire line of the Hudson Bay Railway, from The Pas to Port Nelson, many varieties of grain and vegetables have for years been successfully grown at the inland Hudson's Bay Company posts in the immediate latitude of the country traversed by the route. The records of the Canadian Meteorological Office indicate that the climate is fully as favorable for farming operations as that of the immense agricultural region about Prince Albert.

Work upon the railway has developed the probability that the timber which may be rendered available by the opening of the line is of much greater commercial value than was originally supposed. Surveying corps following the courses of the lakes and streams with which the country abounds have found these to be bordered by wooded areas varying in size from a few acres to some equalling forty or fifty square miles, and, in the aggregate, representing several thousand square miles.

Although the lands adaptable for agrarian and lumber operations may require improvement in the form of clearing and draining, the fact that they are situated within what will be a few hours' run of an important ocean port undoubtedly will give to them a value not hitherto contemplated, and will result in rapid settlement by an immigrant population.

Hudson's Bay and the watershed of the land to the southward and westward thereof are known to be the haunt of an abundance of fish of excellent quality, and this will become an asset to the Western Canadian markets by the opening of the railway. Fresh sea fish, by the new route, can be laid down within twenty-four hours at all the main centers of Manitoba, Saskatchewan and Alberta. This is expected to form the nucleus of an express traffic in perishable merchandise which recent investigation by the Railway Commissioners of Canada points to as a likely source of great profit to the railway.

The definite knowledge of minerals within the area of the railway is limited to the existence of limestone. This occurs near the southern terminus of the line, in a quantity favorable for quarrying and



SCENES ON THE ROUTE OF THE RAILWAY

1 Already a steel bridge or concrete piers are here to span the Saskatchewan River
2 Manitou Rapids, where the ... Bay ... cross the ... of the ... River.
3 Drainage of the ... necessary ... the ... operations and is opening up for settlement a ... country
4 "On the job" near ... the ... line
5 York Factory, known ... to the ... Adventurers as "York Roads," an old Hudson Bay Co. post near Port Nelson.

TERMINAL TOWN SITE FOR PORT NELSON

ON THE CLAYEY, BLUFF-PROTECTED NORTH BANK OF THE NELSON RIVER, NEAR ITS MOUTH, PORT NELSON WILL RISE, AND HERE TRANS-ATLANTIC STEAMSHIPS WILL CLEAR FOR EUROPE WITH GRAIN CARGOES RECEIVED FROM THE NEW HUDSON BAY RAILWAY

sufficient to provide the future supply for the contiguous provinces of the Dominion.

A glance at the geological formation of the cliffs on both sides of Hudson Strait and of the rocky highlands whereof they form the ledge suffices to promise that, as that waterway comes to be frequented as a route of navigation, mining and quarrying industries will result in extending the zone of operation of tramp steamers in the North Atlantic trade to the Strait proper. The entire coast line of Ungava Bay, from the mouth of the George River around to Hudson Strait and thence westward to Cape Wolstenholme, is described by reports to the Geological Survey of Canada as formed of crystalline rocks of great age, with the occurrence, throughout the length of this shore, of mica-granite, and, to a lesser extent, mica-hornblende granite, associated at many points with gneiss of variable character. This usually is of lighter color, finer texture and greater quartz content than the eruptive granite, and the lighter gneisses are invariably garnet-bearing. A like condition is found on the north shore of the Strait, except that the hornblende and mica-gneiss of Southern Baffin Island are distinguished by association with limestone in great abundance and regularity of outline.

Bedded iron ore, similar to the iron-bearing rocks of Lake Superior and credited as being of the same age as those famous deposits, have been the subject of investigation and analysis by corporate interests of the Dominion for several years past all along the east shore of Hudson's Bay, and marble of an exceedingly high grade is quarried on Marble Island, off the western shore of the Bay, and on the mainland, near Fort Churchill.

It is in the well-nigh inexhaustible motive power provided by the streams and waterways that the country to be crossed by the railway has its fundamental asset for future industrial exploitation. An approximate estimate of the discharge of the Nelson River alone gives indication of 156,869 cubic feet per second. From this fact it may be judged that this great force might effectively be employed in the operation of the railway by electricity. An available horsepower of 300,000 is represented alone by the White Mud Falls, a monster torrent in the course of the Nelson River and directly on the line of the railway. And the Nelson is but one of many waterways that may become feeders

of the railway traffic. Some of these, like the Nelson, are navigable. The Saskatchewan River, which empties into Lake Winnipeg—to the east of The Pas—out of which the Nelson flows, accommodates moderate draft river steamers for a distance of half a thousand miles westward, across Saskatchewan and Alberta, to Edmonton, the capital of the latter province. In its turn, Lake Winnipeg is accessbile, by the Red River of the North, not only from the City of Winnipeg, the metropolis of Western Canada, but from as far south of the international boundary line as Grand Forks, North Dakota.

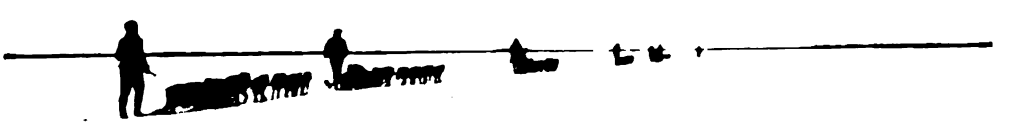
At present there is no human habitation upon the site proposed for Port Nelson. A good-sized settlement, however, is to be found at York Factory, known to the British Admiralty as York Roads, a trading-post maintained by the Hudson's Bay Company almost since its charter by Charles II, just around the peninsula of Beacon Point, which separates the Nelson from the Hayes River, at their entrance to the Bay. The proposed terminal for the railway is immediately north of the 57th parallel of latitude.

Chief Engineer Armstrong describes the navigating conditions at Port Nelson as resembling somewhat those experienced at Quebec, on the St. Lawrence River. The anchorage being nine or ten miles from the mouth of the channel, no serious sea is ever experienced which might cause trouble to any craft larger than canoes or rowboats, and the river-bottom is of sufficient stiffness to provide secure holding-ground for anchors. As to ice, the Nelson River, from its mouth to the terminal site, may be depended upon to be free from May until December.

The Chief Engineer, in a report to the Deputy Minister of Railways and Canals, points to the markedly increased difficulty a hostile fleet would have in an attempt to blockade the Atlantic coast of Canada when the Hudson's Bay route is opened. The fact that ships can enter and leave Port Nelson all the year round, he opines, is one worth remembering when the possibilities of war are considered. He states:

"The defence of Port Nelson from hostile fleets will be comparatively easy. The long, relatively narrow channel approach is easily to be rendered impregnable by means of sea mines, and rendered otherwise dangerous by the removal or changing of buoys and other channel marks. Battleships which carry extreme long-range guns are of such a draft as to render it somewhat hazardous to maneuvre in less than forty-five feet of water, thus preventing their approach closer than fifteen or eighteen miles, a distance considerably greater than the effective range of even the heaviest guns. The lighter ships which might more closely approach carry correspondingly lighter guns. The establishment of strong batteries and fortifications at Sam's Creek would seem to be all that is necessary to render Port Nelson quite unassailable."

The likelihood of Port Nelson becoming an objective strategic point in the calculations of land or naval forces invading the Dominion occurs as not altogether a supposition when the picturesquely dramatic events of the long period of warfare between the English and the French, that was terminated by the Treaty of Utrecht, in 1713, are reviewed. The old Fort Nelson, or Fort Bourbon, as it was alternately called by its British and Gallic besiegers, was situated on the shore of the Nelson River opposite to that which is to provide the site for the Hudson Bay Railway terminals, and nearer to the mouth of the river. That point became the scene of repeated conflicts, and the stubbornness of the resistance offered on each occasion of attack and the decisiveness which marked its fall, proves how important a stronghold it was regarded.



COUNSELLORS FROM THE RANKS

By E. C. SNYDER

"IN ITS personnel the Cabinet is representative of the elements that have contributed to the making of a virile people, the great majority of the men having attained fame and position in the hard school of experience. And half of the ten who hold portfolios from President Wilson are from where negro 'mammies' crooned the first lullabies that fell upon their baby ears, and where the 'tar baby' and 'b'rer rabbit' early became the favorite stories of the fireside."

A FIRM, square, unyielding mouth; a high, dome-like forehead; a strong, self-reliant chin; rather predominant cheek-bones; the faintest suggestion of whiskers, and eyes of an indeterminate color, veiled in glasses, form the composite picture presented by Woodrow Wilson's Cabinet, in whose secret making the President seemingly found much genuine enjoyment between November 4 and Inauguration Day, while newspaper folk and politicians kept up a continual guessing as to its composition.

In its personnel the Cabinet is representative of the elements that have contributed to the making of a virile people, the great majority of the men having attained fame and position in the hard school of experience. And half of the ten men who hold portfolios from President Wilson are from where negro "mammies" crooned the first lullabies that fell upon their baby ears, and where the "tar baby" and "b'rer rabbit" early became the favorite stories for the fireside.

With the South in the saddle, as it most certainly is, one who desires to get along in Washington during the next four years will do well to say "you all" and "we all," with the words of a sentence so run together that it sounds like the purling of a rivulet on its way to join some sleepy palmetto- or cypress-fringed river, while high in the branches sways and sings a scarlet tanager.

And this does not indicate, by any means, that the Administration is going to be given to the easy-going philosophy that characterized the southern statesmen of a former day. On the contrary there is everywhere discernible, in cabinet meeting, in conference of bureau chiefs and in the conduct of the departments themselves, a new standard for public service with "high thinking and plain living," the President's creed, overtopping all else.

While the Cabinet has yet to find itself, because of its newness and the lack of intimate personal knowledge of the accomplishments of one another, the average of experience in public service is much higher than that of the Taft Cabinet. Mr. Taft believed in having about him a galaxy of legal lights whose political training had been largely negative, whereas Mr. Wilson, while still adhering to the policy of a cabinet largely composed of lawyers, has shown consummate skill in the choice of an editor, an educator a manufacturer, a miner, an engineer, to give it balance and due proportion, and its political influence must, therefore, be correspondingly greater than that of Mr. Taft's.

William Jennings Bryan, the premier of the Cabinet, has had the experience, unique in American politics, of being thrice defeated for the Presidency, while he has won large personal and financial success. It almost seems that defeat but added to his popularity. Certain it is that no statesman of the present generation has retained so dominant a grip upon the destinies of the Democratic party for nearly twenty years as has the "American Gladstone." From the time he leaped into fame on the crest of a wave of eloquence that swept everything before it in the memorable Chicago convention of 1896, until he held his forces intact and molded the policies of the party to his will in the Baltimore convention of 1912, Mr. Bryan has been the chart and compass of an enormous following, his partisanship being ennobled by a broad humanitarianism that brings him very close to all the people.

For upward of a quarter of a century I have known Colonel Bryan in many capacities—legislator, newspaperman, publisher, orator, soldier, statesman and globe-trotter. During that time I have sat elbow-to-elbow with him in national conventions as a representative of the press; have seen him at the head of a Nebraska regiment during the Spanish-American War, asking only for active service; have sat under the spell of his eloquence and have been electrified by that remarkable oration, the peroration of which created a very frenzy of enthusiasm in that great convention, and brought the delegates to their feet cheering the sentiment: "You shall not press down upon the brow of labor this crown of thorns; you shall not crucify mankind upon a cross of gold."

Colonel Bryan is a remarkable personage in many ways. He has a genuine sense of humor and is one of the very best story tellers in the country, but only of stories fit for the drawing-room. He "never took a drink or smoked a cigar" in his life, but is fond of wholesome, substantial food, his repast on retiring generally being a quart of milk and plenty of bread to break into it.

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WILLIAM JENNINGS BRYAN
SECRETARY OF STATE

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MRS. WM. J. BRYAN

With all his humanness, William Jennings Bryan entrusts his innermost thoughts to but very few persons, although he numbers his acquaintanceships by hundreds. His one particular friend, counselor and adviser is his wife, Mary Baird Bryan, who, in the strong light that has been turned upon her since her marriage to Mr. Bryan at Perry, Ill., on October 1, 1884, has been found to be a most brainy, charming and interesting woman, marching abreast of her husband in the progressive strides that have made him a world figure. Mrs. Bryan is widely traveled and well-read and versed in the languages, especially German, a feature which will particularly lend itself to the duties devolving upon her as the chatelaine of the Secretary of State's household.

Mr. and Mrs. Bryan have three children: Mrs. Reginald Owen, wife of Lieutenant Owen of the Royal Engineers, British Army; Mrs. Richard Lewis Hargreaves, whose husband is engaged in

business in Lincoln, Neb.; and Mr. William Jennings Bryan, Jr., who is now in Arizona on account of his wife's health.

William G. McAdoo, the new Secretary of the Treasury, although he has lived in New York for a number of years, is typical of the South, with a persuasive musical voice and a delightful southern accent, which may have been largely instrumental in securing for him a hearing at the hands of the big financial interests when the Hudson tunnels were yet in embryo and the name of McAdoo unknown in the railroad or engineering world.

Mr. McAdoo was born near Marietta, Ga., in October, 1863, so that he is not quite fifty years old. He attended the University of Tennessee until his senior year, when he left college to study law, while he supported himself as deputy clerk of one of the divisions of the U. S. Circuit Court.

Twenty years ago he left the South to try his fortunes with others of his countrymen in the Metropolis of the Nation, and the part he played in vitalizing a moribund proposition that had bankrupted two companies is one of the big achievements in a city of big things. Mr. McAdoo's part in the building of the Hudson tunnels consisted chiefly in reviving the idea and hiring the engineers for a project that men less bold than he considered visionary and impractical. He set out to spend $4,000,000 to complete a partly dug tube, and ended by spending nearly $70,000,000.

When his tubes were well under way, Mr. McAdoo called upon President Cassatt of the Pennsylvania Railroad to propose the arrangement now in vogue, whereby that system and others carry their passengers into the heart of Manhattan.

Photo Harris & Ewing

WM. G. McADOO

SECRETARY OF THE TREASURY

"What can I do for you?" asked the great railroad president of the boyish-looking six-footer with the deep-set eyes, the sensitive mouth and the musical southern voice.

"I just want to take your ferries away from you," replied the smiling, confident apostle of the New South.

Mr. Cassatt called a meeting of his board the next morning and said to them: "A young Southerner who studied law, but has a penchant for big engineering problems, wants to take our ferries away from us. You know they are the ones that make our ferry service profitable, but there will be bigger profit, in my judgment, if we accept his plan. I believe in him and we had better go along."

Like all Southerners, Mr. McAdoo is fond of horseback riding. He plays golf occasionally, but his favorite recreation is driving a high-powered automobile, which he does with a zest that is sometimes akin to recklessness, maybe a bit reflective of his entire make-up. The throttle is wide open with William G. McAdoo.

The new Secretary of the Treasury is a widower and has six children, the eldest, a daughter, being married. His home in Washington will be presided over by his daughter, Miss Nona McAdoo, who made her debut shortly before the death of her mother last year.

Just a normal, healthy boy was Lindley M. Garrison, of New Jersey, Secretary of War, when he played in the parks and streets of Camden, where he was born forty-nine years ago, the son of an Episcopal clergyman, then rector of St. Paul's, and the boy, now grown into vigorous, healthy manhood, has made a most enviable reputation for a perfect frankness as refreshing as it is unusual.

After his public school days in Camden, Secretary Garrison attended the Episcopal Academy in Philadelphia for a short period, later entering Phillips - Exeter Academy in preparation for Harvard, where he specialized for a year. But the classical course had little or no charm for Judge Garrison, the desire to become a lawyer taking possession of him about the time he got through wanting to be a policeman or a street-car conductor, with the result that he graduated from the law department of the University of Pennsylvania in the class of 1886.

For two years the Secretary of War practiced law in Philadelphia. Then he removed to Camden where, for ten years, he engaged in the practice of his profession. In 1899 he took up his residence in Jersey City, being appointed Vice-Chancellor of the Court of Chancery of New Jersey, on June 15, 1904. This position he held when President Wilson asked him to enter the Cabinet as War Secretary.

During the years of his active practice as a trial lawyer, Lindley M. Garrison looked upon a place on the bench like unto the Kingdom of Heaven, to be achieved only by the elect, and yet when the honor of sitting as a member of one of the highest law courts in the nation came to him, it neither "puffed him up nor filled him with false pride."

The impression was general in Washington that Mr. Garrison, having been a judge, would take a sternly judicial view of public affairs as they related to his department, and there were many misgivings among the rank and file of the war office on his advent. But Secretary Garrison has done nothing of the kind; on the contrary he has shown such an earnest desire to know the "whys and wherefores" of the department, with all its intricacies of legislation, that he gives abundant promise of being one of the most valuable, as he is one of the most genial, members of the official family.

Thirteen years ago Mr. Garrison married Miss Hildeburn, daughter of Capt. Samuel Hildeburn, U. S. A., and the fact that she is the daughter of an army officer will give her a closer affiliation with that branch of the service over which her husband presides than would otherwise be the case. Secretary and Mrs. Garrison have no children.

It is not often that a man reaches the high post of Attorney-General of the United States after he has held no higher office than Assistant Attorney-General, and before that held no public office at all. But that is the case with Attorney-General James Clark McReynolds, born in Kentucky, July 23, 1865, credited to Tennessee, but in reality, on March 4, when he was selected for a place in the Wilson Cabinet, a resident of New York.

The son of Dr. John O. McReynolds, a leading physician and banker of Elkton, Ky., and Ellen Reeves McReynolds, most of his boyhood was spent at his home, going to the village school, and remaining under the home rooftree until he was old enough to go to college. He attended Vanberbilt University, Nashville, Tenn., and in due course took the degree of B. S., in 1882. In 1884 he had taken a law course at the University of Virginia, and went to Nashville, where he practiced law for fifteen years, with little to vary the life, except in 1896, when he was persuaded to become the candidate for Congress of the

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LINDLEY M. GARRISON
SECRETARY OF WAR

MISS NONA McADOO
Photo Aime Dupont

MRS. LINDLEY M. GARRISON
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MRS. W. C. REDFIELD
© *Harris & Ewing*

MRS. J. DANIELS
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Palmer and Buckner Democrats of the sixth Tennessee district.

While a Democrat, he so much opposed the attitude of William J. Bryan, Democratic candidate for President, that he quit the old party and went with the opposition. He has never sought to minimize his course, and does not object to being set down as a "Gold Democrat" in the reference books which contain his brief biography.

For a few months, while he was a young lawyer at Nashville, Mr. McReynolds was private secretary to Howell E. Jackson, United States Senator from Tennessee until the latter was appointed to the United States Circuit bench by President Cleveland.

Defeated for Congress by John Wesley Gaines a number of years ago, Mr. McReynolds went to work in the law with an energy and natural aptitude for mastering difficult problems which brought him continuous rewards. Independent and Republican friends in Tennessee, who knew of his moral courage and professional capacity, so continually sounded his praises that President Roosevelt, in 1903, appointed him Attorney-General of the United States, an office which he held until 1907, when he resigned and went to New York. He had hardly established himself there when he was successfully importuned by the Government to undertake, as special attorney, proceedings for the enforcement of the anti-trust laws, especially against the Tobacco Trust and the Anthracite Coal Trust.

His nomination to be a member of the Wilson Cabinet, in view of the fact that the chief office, that of Secretary of State, was given to William J. Bryan, whom he had always opposed, was the greatest surprise disclosed in the Cabinet slate. It indicated to most people that President Wilson was not controlled by prejudices that had long divided the Democratic party.

Mr. McReynolds is the only bachelor member of the Cabinet; but his tall, erect, athletic figure, his easy bearing and grace of manner are at least suggestive of a divergence from his habits of celibacy. His friends say that he has been too busy a man in his profession to think seriously of much else.

Standing out in the middle of his room in the Post Office Building, Albert Sidney Burleson, the new Postmaster-General, amazes the clerks about the department with the seeming ease with which he dispatches the business of the day, not only seeing hundreds of people, but finding time to attend upon the multitude of little things required of him. Always a hard worker, Mr. Burleson is now working harder than ever, with the result that he has accomplished more in the way of appointments than any of his associates, a fact which has caused much comment.

A true native

Texan, born in 1863, Postmaster-General Burleson comes of Scottish stock, which is strongly reflected in his rugged form and character. Mr. Burleson entered Congress in 1898 on the strength of his record as a relentless prosecutor of law-breakers in the "wild and woolly" days of an untamed section of the State. He served in Congress for fourteen years, and although known as a firm and virile minority party man, he developed enough to write into the statute books much constructive legislation affecting agriculture, with especial reference to cotton, the most important product of his section and the basis of its prosperity.

Mr. Burleson, early in his career, learned the value of the newspaper and the magazine, with the result that he is interested in big things—big politics, the amelioration of China and the working out of Dr. Sun Yat Sen's theories for the new republic, the Balkan situation and the changes being wrought in the map of Europe, to say nothing of the Mexican imbroglio and the likelihood of its playing a big part in our own history, as it played in the history of his family.

With Mrs. Burleson, who is a woman of strong intellect and of pronounced literary ability, Mr. Burleson has studied and mastered many difficult subjects, including a number of foreign languages.

Like many men of vigorous action in business and professional life, the "P. M. G.," as as he is called by everybody about the big building, is fond of his rod and reel and his guns. In the old days, before he assumed the exacting duties of Congressman from a progressive district, he used to enjoy a deer hunt every year and, whenever he could find respite from the duties of his office in Austin, would slip away to some cool, secluded nook along the Colorado, there to cast for bass or channel cat and dream the dreams that come to all lovers of the great outdoors

With a brilliant wife and three charming daughters to make his home life delightful, Mr. Burleson's official life should be both fruitful and effective.

MRS. F. K. LANE
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MRS. D F. HOUSTON
Photo Strauss, St. Louis

MRS. ALBERT S. BURLESON
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MISS AGNES WILSON
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Josephus Daniels is the fifth Secretary of the Navy from North Carolina in the history of Cabinets, and it is singular that the State never had any other kind of Cabinet officer. It is also remarkable that the new Secretary is the only one of the five who went into the Cabinet without having ever before held important office. The only thing like a prominent office Mr. Daniels ever held up to his appointment as Secretary of the Navy was as member from North Carolina of the National Democratic Committee.

He was born in the village of Washington, N. C., May 18, 1862, the son of Josephus Daniels and Marie Cleve Seabrooke Daniels. His father, of Welsh descent, was a shipbuilder and spent some time in that vocation in Providence,

Rhode Island. He died during the war of the States, when the future Secretary of the Navy was not three years old. The boy attended the village schools for several years, and then went to Wilson, N. C., Collegiate Institute. His first confessed ambition was to be an editor, and he became an editor while he was in his teens, conducting a school publication called the "Cornucopia." At eighteen years of age he was editor of the "Wilson Advance," a grown-people's newspaper. Thereafter he became editor of the "Raleigh State Chronicle," succeeding Walter H. Page, formerly editor of "World's Work" and now our Ambassador to the Court of St. James. This paper he consolidated with the "Raleigh News and Observer," of which he has long been the editor, and is now the owner.

Photo Harris & Ewing

ALBERT SIDNEY BURLESON
POSTMASTER GENERAL

Mr. Daniels has kept constantly employed in the newspaper field, and has been one of the foremost of southern publishers and journalists. He has not varied from this occupation, except for a few years when he was chief clerk of the Interior Department during the last Cleveland administration.

The last Democratic Secretary of the Navy was also a southern man, Hilary Herbert, of Alabama. Mr. Daniels, like the average of the Wilson Cabinet, is physically vigorous and in the very prime of life. With the aid of the energetic and sagacious young Franklin D. Roosevelt, of New York, as Assistant Secretary of the Navy, the same office held by his remarkable cousin, Theodore Roosevelt, it is expected the department will supply a most interesting feature of the Wilson administration. Mr. Daniels, in politics, has been described as a progressive. He was long an ardent follower of the leadership of William J. Bryan. He was one of the first advocates of the nomination of Woodrow Wilson for President, and following the convention at Baltimore was manager of the literary bureau for the campaign.

Mr. Daniels has a most interesting family. His wife was Addie W. Bagley, daughter of Major W. H. Bagley, and a sister of Ensign Worth Bagley, the first American officer and the only officer of the Navy to lose his life in battle in the war with Spain. Mr. and Mrs. Daniels have taken a suburban home, near the location of the old Grover Cleveland mansion and adjoining the estate of Senator Newlands, of Nevada. In a playground covering ten acres, his four lusty boys, not yet out of their teens, will have plenty of room to run and wax strong.

What is the keynote to the character of Franklin K. Lane, the highly equipped Secretary of the Interior? What is the keynote? The answer came suddenly when I heard him propound to the late E. H. Harriman, president of the Harriman lines, a series of questions as to railroad policies. Then I knew that the distinguishing features of Mr. Lane's character are: A true appreciation of the just proportion of things, an intense belief in the laws of equity, an earnest advocate of the equality of man, and an uncompromising hater of shams and hypocrisies.

As laborer, as employer, as lawyer, as corporation counsel, as city attorney, as newspaper correspondent and as member of the Interstate Commerce Commission, Franklin K. Lane has shown these things. As a keen man he is mentally trying to do to-day's work within that period rather than year after next, but to do the work of to-day as a thing related to the past and the future. He showed this trait most largely when, as San Francisco's first corporation counsel under its new charter, he had many pioneer cases requiring not only infinite tact but preeminent constructive ability.

So signally successful was he that he came within 2500 votes of being elected governor of California in 1902, after 7,000 Democratic votes had been rejected on account of defective marking. At that same election the candidate for chief justice on the Republican ticket received 55,000 majority, a striking example of Mr. Lane's popularity with the masses.

Franklin K. Lane is a practical conservationist, having due appreciation of the Government as a proprietor and of our civilization as one of private initiative rather than of government operation, and along these lines he will work. The fact that he cannot be President of these United States, because he was born under the "Union Jack" in Prince Edward Island, nearly fifty years ago, does not concern the new Secretary of the Interior the least bit.

Mr. Lane has plunged into the work of one of the most troublesome departments of the Government with a single purpose, to see that even-handed justice is meted out to the millions who are dependent upon the department's policy with regard to public lands, patents, Indians and pensions.

Has Mr. Lane a hobby? Yes, I should say it is his wife and his children, Mrs. Lane being a handsome and accomplished woman who has a taste for art and music. Mr. and Mrs. Lane have two children, Franklin Lane, Jr., who is sixteen, and Nancy, who is ten.

Big problems confront the new Secretary of Agriculture, David Franklin Houston, whose appointment was the sensation of Inauguration week. President Wilson had evidently made a close study of the Department of Agriculture previous to taking the oath of office, for in his masterly inaugural address he spoke of "carrying science direct to the farm." Casting about for a man who was not only thoroughly equipped from a scholastic and scientific point to fill the duties of the office, but who had large executive ability as well, he finally hit upon Mr. Houston, chancellor of Washington University of St. Louis, whose work as a schoolman had been known to the President for many years.

While the appointment is credited to Missouri, Professor Houston may be said to represent three States: North Carolina, where he was born, February 17, 1866; Texas, where he served long and brilliantly; and Missouri, which, through this appointment, has the honor of having six Cabinet officials from that State within a short period of years.

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J. C. McREYNOLDS
ATTORNEY-GENERAL

Progressiveness and aggressiveness have been the distinguishing factors in the life of the new Secretary, whose robust constitution, capacity for hard work and joy in his ability to do good for the masses of mankind give hope that he will be able to solve the problems which not only deal with the productivity of the soil but also with improving the methods of agriculture.

Throughout his busy life Chancellor Houston has shown a preference for history, biography, government and economics, having written a most exhaustive study on "Nullification in South Carolina," which has received high praise from literary critics and the statesmen of to-day. In addition to this excellent work he has written innumerable treatises on agriculture and political subjects. And in passing, those who know the new Secretary extremely well say that he has a marvelous knowledge of plant life, knowing their Latin names and taking a very great deal of humor in reciting them to those who know him well, as restful places along the lines of conversation.

Secretary Houston married Miss Helen Beall in Austin, Texas, in 1895. They

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JOSEPHUS DANIELS
SECRETARY OF THE NAVY

have a family of young children: Franklin, a boy of thirteen; Helen, who is two years old; and Lawrence, an infant of three months. Mrs. Houston is a great-granddaughter of W. P. DuVal, who was territorial Governor of Florida in Jackson's time. Owing to Mr. Houston's connection with the Washington University, Mrs. Houston has been brought into close contact with college activities and has become much interested in sociological studies.

The tariff cemented President Wilson's confidence in the new Secretary of Commerce, William C. Redfield, of Brooklyn, New York. His position, as a manufacturer, that American labor did not need the protection afforded by the tariff, brought Mr. Redfield conspicuously before the country as a tariff reformer who had made an intimate study of this most intricate of economic questions, and which is to play so important a part in the history of the administration, which, in its platform, made at Baltimore, has pledged itself to tariff reform.

His speeches on the wool schedule, during the debates on the Underwood bills in the Sixty-Second Congress, attracted so much attention that, when Woodrow Wilson received the nomination for the Presidency, Mr. Redfield was among the first to receive an invitation to visit the standard bearer of the party, and tariff was largely the subject of discussion. Mr. Redfield talked and Mr. Wilson listened, with the result that shortly afterward the President publicly announced that Mr. Redfield appeared to him as an unusually clear thinker on those subjects which are intimately associated with the farmer, the tradesman, the miner, the business man; in fact, everyone who has to purchase or sell the commodities by which he lives.

In 1885, Mr. Redfield married Miss Elise Merceiu Fuller, daughter of a New York banker, Humphrey R. Fuller. Mrs. Redfield was educated in New York and has spent most of her life in that city. Mr. and Mrs. Redfield have two children: a daughter, who is married and resides in Canada, and a son, Humphrey Fuller Redfield, who is a student at Amherst College.

Mr. Redfield is tall, wears side-whiskers and a mustache, and is a person of commanding appearance and striking personality. He was born in Albany, N. Y., in 1858. He has been engaged in the mercantile and manufacturing business for many years and has been successful—so successful that, at the time of his appointment to the Cabinet, he resigned many positions in strong financial institutions, including that of a director of the Equitable Life Assurance Society.

The Secretary of Labor, William Bauchop Wilson, of Pennsylvania, like his predecessor of the same patronymic in the Taft Cabinet, is a Scotchman, born in Blantyre in 1862, coming to the United States with his parents when he was eight years of age, and going to work when a boy of nine as a picker in the

coal mines near his new home in the Keystone State.

From picker in the mines, the first Secretary of Labor held various positions in that underground world of which the great mass of our people can know nothing, except as the chorused "De Profundis," the cry for better treatment, comes out of the depths and pictures are shown indicating the hardships of a life below the surface of the ground. As soon as he was eligible, Mr. Wilson joined the ranks of the Mine Workers' Union and he has taken an active interest in trades unionism ever since. He has faced penury and want, he has struggled as few men have struggled and has looked death in the face on many occasions. He has been a fireman on a railroad, worked in the sawmill, "stuck type" on a country newspaper and "fed" a Campbell press.

"The Department of Labor," said Mr. Wilson, as he looked at me with his clear blue eyes across his desk in the newly-created office and which will shortly be housed independent of the Department of Commerce, "I regard primarily for the promotion of industrial peace, with honor and justice to all parties concerned, and not for the adjustment of differences when they reach the spectacular stage.

"The Department of Labor was organized to help the toiling masses and to give them some hope for better treatment than possibly they are now receiving, some court where honest grievances might be heard and where equitable adjustments between employer and employee would be possible, with justice to all parties concerned."

Believing that the immigration question is distinctly a labor question, since the immigration laws are made, not with reference to the idle or rich persons who come to the United States, but with respect to the workers, the recommendations of Secretary Wilson will be watched with absorbing interest by the masses everywhere. Mrs. Wilson is also Scotch, having known her husband as a child when they played together on the banks of the Clyde before their families emigrated to the new country.

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D. F. HOUSTON
SECRETARY OF AGRICULTURE

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FRANKLIN K. LANE
SECRETARY OF THE INTERIOR

Mrs. Wilson was Miss Agnes Hart Williamson. The eldest of their eleven children, Miss Agnes Hart Wilson, has been her father's secretary since she was fifteen years old, and has a comprehensive

knowledge of labor questions. During the years Mr. Wilson was in Congress, and he served continuously since the beginning of the Sixtieth Congress, his daughter Agnes has been "his right hand."

Taken together these ten men are the Counsellors chosen by Woodrow Wilson to aid him in the conduct of the Presidency of the United States, an office burdened with duties and responsibilities at least as numerous and as weighty as any other in the world. But each of the ten, besides acting as Counsellor to the President, is himself the chief executive of a great department of a government which not only influences for good or ill the lives of the more than one hundred million people who owe it allegiance, but also affects to a greater or less degree all the nations of the earth. The problems they are called upon to face are therefore many and complex.

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W. B. WILSON
SECRETARY OF LABOR

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W. C. REDFIELD
SECRETARY OF COMMERCE

Time and precedent have established the official standing of every member of the Cabinet circle as they here pass in review. There can be no friction between them on the score of seniority in party councils or preeminent achievement. Their orbits, so far as official standing is concerned, are fixed, but the elements that make for leadership along other lines and which are largely individual, giving eminence to one and comparative obscurity to another, are the pivots on which swings the human story of every administration. And as it has been with every administration, so will it be with this one, whose advent has been watched with absorbing interest, not only by the millions of our own people, but by the nations of the world. And the prayers of the people are for a wise, patriotic, statesmanlike administration that will redound to the glory and honor of President Woodrow Wilson.

THE SEAPORT OF LOS ANGELES

By CHRISTOPHER M. GORDON

*"THIS 'imperial' territory contains almost one-third of the wealth-producing resources of the United States and must, in the very nature of things, find its Pacific Ocean outlet over the attractive southern trans-mountain trade routes from the east, that center in the Port of Los Angeles * * * which, in large part, will be municipally owned and operated." A member of the Los Angeles Harbor Commission, Mr. Gordon would rank the lovely California city among the great ports of the Pacific Coast.*

IT is a marvelous transition that a century of history has witnessed on the flower-carpeted coast of Southern California. No fairer scene might be conceived in the imagination of poet or artist than that which was a constant characteristic of the vicinity of the early Spanish settlement of "La Ciudad de Nuestra Senora la Reina de Los Anjeles"—the City of Our Lady the Queen of the Angels—one hundred years ago. On every hand there were the same floral wealth and beauty of foliage, the same towering, snow-capped mountains maintaining their vigil over the destinies of the city, the same azure skies that provide the Los Angeles of to-day her glorious environment. But the quiet, ascetic influence of the Spanish missions of old is forever dispelled, the call of the Angelus from silver-tongued bells and the solemn chant of the "padres" are but hallowed memories of a bygone age. And the pulsating energy and high-pressure intensity of modern industrial life testify most eloquently to the rise of a mighty city on the site of the ancient mission.

For many years Los Angeles was content to develop essentially as an inland center, was content to gather unto herself the products of the groves of orange and lemon and cherry and fig and of the vineyards that make of her environs a very Paradise; was content to occupy the position of a station on the railroad highways from the Atlantic and the Gulf to the Golden Gate. But with the dawn of that great undertaking which must reverse the maritime standards of the whole world, Los Angeles resolved to take rank among the ports of the Pacific seaboard of North America, although a plain of more than 100 square miles separates the city proper from the ocean. Already a municipal terminal and belt railway is being built to traverse this area, which it is planned to make the future industrial section of the Southern California metropolis.

Los Angeles has become not only a California port, but a national port, and is rapidly advancing to the position of a great international port. It is farther east than Reno, Nevada; it is the nearest Pacific port to Kansas City and all the territory tributary thereto, and this over the easiest possible trans-Rocky Mountain grades. The Panama Canal is 413 miles nearer to Los Angeles than to San Francisco.

No other city of the United States of more than 100,000 population in 1900 equaled the percentage of growth made by Los Angeles, as shown by the last Federal census. The Pacific Coast grew more rapidly, proportionately, than did any other part of the country, but the figures indicate that the apex of Pacific Coast immigration was at Los Angeles. The comparative figures for the principal Pacific port cities are as follows:

	POPULATION 1900	POPULATION 1910	PERCENTAGE OF INCREASE
Los Angeles	102,479	319,198	211.5
San Francisco	342,782	416,912	21.6
Seattle	80,670	237,194	194.0
Portland	90,426	207,214	129.2
Tacoma	37,714	83,743	122.0
San Diego	17,700	39,578	123.6

Photo by C C. Pierce & Co., Los Angeles
A METROPOLITAN THOROUGHFARE
SIXTH STREET IS A VERITABLE CANYON OF OFFICE BUILDINGS

The city is the center of activity for all of the Southwestern United States, with its amazing wealth of agricultural, horticultural, mineral, oil and other resources. It is the natural Pacific port of distribution and receipt for the mountain States of Arizona, New Mexico, Southern Nevada, Utah, parts of Wyoming and Montana and, in fact, for much of the great central basin west of the Mississippi River. This "imperial "territory contains almost one-third of the wealth-producing resources of the United States, and must, in the very nature of things, and for all time, find its Pacific Ocean outlet over the attractive southern trans-mountain routes from the East, which converge to their logical center in Los Angeles.

Where, in minor details, nature has failed to supply to Los Angeles the requirements of a modern harbor, engineering skill is fully overcoming the deficiencies, with the result that Los Angeles must soon possess a harbor for all manner of shipping as nearly perfect as can be found in any part of the world. This is true alike as to location, size, shape, convenience and possibilities of expansion. The outer harbor consists of the splendid Bay of San Pedro, which looks to the south, and is protected on the east, north and west by the encircling mainland of the continent. On the southwest it is protected by the beautiful island of Santa Catalina, which is but 18 miles distant, and parallels the main coast for a length of 30 miles.

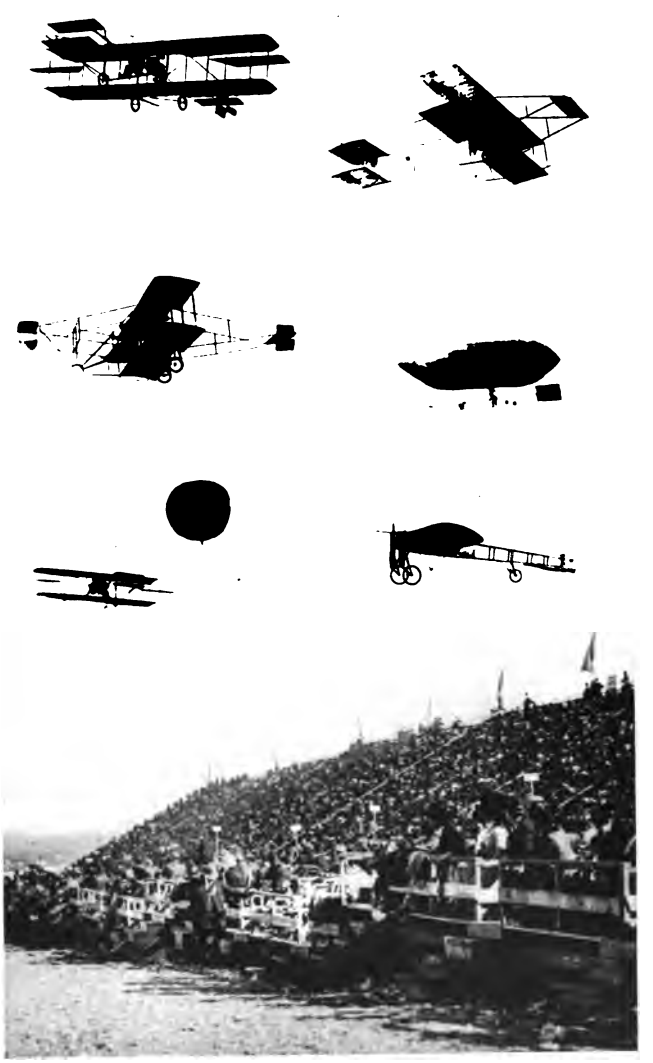
In addition to these natural features, the Federal Government, for fuller protection from the southern seas and in order to provide a perfect harbor of refuge, has built one of the largest stone breakwaters in the United States. This is a magnificent specimen of marine construction, extending eastward from Point Fermin for a distance of more than two miles and providing a low-tide depth of 50 feet. The space thus immediately guarded from storms contains more than 700 acres, and more than one-half of this has a depth of 30 to 50 feet. The anchorage is of the best, and the means of ingress and egress for shipping are unsurpassed.

Los Angeles is especially important as a port of fuel supply for the world's shipping. Here the Salt Lake Railway will establish immense coal bunkers, from

which Utah coal will be fed to coal-burning ships at a price that will command the business. Here Alabama coal — taken through the Panama Canal — can be stored and supplied to shipping at about $4.00 per ton. Here pipe lines from the marvelous oil fields nearby will pour fuel oil into oil-burning ships at a price as low as that of any other port.

Since all steamships are propelled by means of either coal or oil, it follows that all steamships that can conveniently do so will call at the Port of Los Angeles. All of these potential natural and artificial advantages are fully recognized and appreciated by the virile citizenship of Los Angeles.

The Port of Los Angeles will be, in large part, municipally owned and operated. In the outer harbor is Municipal Pier No. 1, 3500 feet long by 650 feet wide, and with a low-tide depth of water of 35 feet on all sides. Its superficial area is 77 acres. The water area provided is 400 feet of width on one side and 550 feet on the other, and the present low-tide depth of 35 feet will be increased to 40 feet, and out to the 40-foot contour line, whenever the shipping requires it.



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"FLY TIME IN LOS ANGELES"

DOMINGUEY AVIATION FIELD, THE AERIAL CONTESTANTS AND THE "FANS"

A reinforced concrete sheet-piling wharf is now being constructed around this magnificent pier, and immense two-story warehouses are soon to be built. Equipped with the latest and most approved appliances for handling and despatching cargo, these will be in readiness for the increase of shipping that must result from the opening of the Panama Canal. To these piers there can come, at any hour of the day or night throughout the year, with few exceptions, the largest ships afloat, and these may enter the harbor, berth under their own steam and deliver freight and passengers within a half-hour from the open sea.

Two fortunate conditions are peculiar to the harbor of Los Angeles. There is no bar at its entrance, and there is little or no silting—hence the ease and safety of entrance and egress, and of the constant maintenance of a uniform depth, with little or no dredging. The Federal Government has expended about $5,500,000 in this harbor, all told, to date. The City of Los Angeles is now expending $3,000,000, and proposes to continue its expenditures up to $10,000,000, at least.

The inner harbor of Los Angeles furnishes the very best of port conditions, and has dockage facilities that can easily and cheaply be permanently increased to meet the growing demands of commerce. The entrance from the outer harbor is completely sheltered by the breakwater, and has a channel width of 500 feet. It is now proposed to increase this width to 750 or 1000 feet. The channel, on both sides, for a distance of two miles, is lined with wharves and slips and railroad trackage, between two stone jetties built into the sea.

The inner harbor, which is really the delta of the Los Angeles and San Gabriel Rivers, embraces within its area thousands of acres of submerged and contiguous low land, and out of these tide lands there can be created, at little cost, a practically limitless industrial harbor. When the commercial, industrial and manufacturing expansion of the city and port demands 30 miles of wharf frontage, it will be forth-

Photo by Wood, San Pedro, Cal.

S. S. "HAZEL DOLLAR"
DISCHARGING $250,000 CARGO OF HARDWOOD FROM THE ORIENT

and terminates in a turning basin 1600 feet in diameter, at the margin of the inner harbor proper.

From this turning basin adequate channels lead off to other wharves and dockage, and into two other turning basins—one known as the east and the other as the west basin. Another channel extends eastward from the main turning basin for a distance of about four miles, to the east end of the inner harbor, and to what is known locally as the Long Beach Harbor, which has its own entrance from the ocean coming, and when it needs 60 miles, this, too, will still be possible, in this incomparably accommodating inner harbor. Its location is of the very highest strategic importance from a commercial point of view.

In 1912 the number of lines of ships calling at the port was eight times greater than in 1902, and three times greater than in 1907. The number of ships calling was three times greater than in 1902, and twice as great as in 1907. The net tonnage was seven times greater than in 1902, and

Photo by Wood, San Pedro, Cal.

INNER HARBOR, LOS ANGELES

FORMER NEW YORK-BOSTON TURBINE STEAMSHIPS "YALE" AND "HARVARD," WHICH LATELY CRUISED TO THE PACIFIC "ROUND THE HORN," ENTERING AND LEAVING ON SAN FRANCISCO RUNS

three times greater than in 1907. The passenger business was twenty times greater than in 1902 and seven times greater than in 1907.

The city has commenced the construction of a municipal terminal and belt railway, which will belt the entire harbor, serving all wharves and unifying the entire system of dockage in both the outer and inner harbors. It will also belt the present industrial section of the city, and along its trunk-line there will grow up the great future industrial areas of Los Angeles, served by a hundred spurs, on a

Photo by W. C. Dickerson, Los Angeles

TWO-MILE STONE BREAKWATER

PROVIDING SHELTERED HARBOR OF 700 ACRES WITH DEPTH OF 30 TO 50 FEET

Photo by Milton Loryea, Los Angeles

A TYPICAL CITY RESIDENCE

THE OLD MISSION STYLE OF ARCHITECTURE SET IN A WEALTH OF FOLIAGE

level plain, more than 100 square miles in extent, between the city and the sea.

Although the city owns most of the harbor frontage and is developing it as a municipal enterprise, ample encouragement is given to private enterprise. Already several private corporations own and operate wharves within the harbor. These have a frontage of several miles.

Large sums of money are being expended by the city in perfecting approaches to the harbor, not only for rail facilities, but also for motor-truck traffic, which promises to become a strong competitor of the railroads in handling local freight, especially that moving in less-than-carload quantities.

The fact that the city's present population of half a million is four times as great as it was ten years ago, and that in 1920 a population of more than a million is assured, together with the accessions to its maritime trade which are inevitable upon the opening of the Panama Canal, guarantees for the Port of Los Angeles a volume of business that must place it high in the list of the world's great commercial terminals.

The assembling in New York, in December last, of the port officials of the United States and the organization by them of a new body, known as the National Association of Port Authorities of the United States, was a long step in the right direction. This body will meet annually, and modern harbor construction, regulation and control, in contra-distinction to the imperfect methods hitherto obtaining, will be the object of its activity.

The subject of port development is becoming a factor in economic science, and port officials are becoming professional experts in their line. The interdependence of ports, in the evolution of port facilities, is at last being recognized, and the chief rivalry among ports now is as to which may best serve by most fully obeying the laws of trade.

FOR A 1000-MILE ERIE CANAL

By CYRUS CLINE, *M. C.*

*"THE construction of a barge canal from Chicago to Toledo, to carry a part of the immense tonnage of heavy freight from Chicago and intervening points direct to New York, Boston, Baltimore and Philadelphia, without breaking bulk, is, in fact, but an extension of the Erie Canal. * * * * For three-fourths of the distance the waterways from Chicago to the seaboard are already constructed." So the Representative in Congress from the Twelfth Indiana District urges the speedy completion of the useful water highway.*

SHALL the Erie Canal be extended westward to Chicago? Shall the famous old waterway directly link the pulsating industry of the busiest and greatest of lake ports with the electrifying commerce of America's mightiest portal, New York?

Harris & Ewing

The proposed Toledo-Fort Wayne-Chicago barge canal across the northern part of Ohio and Indiana has been a subject of discussion for more than sixty years. As population increases and business develops, the necessity for the competing methods of transportation becomes more and more important, not only to the section named, but to the entire country. Its proposed location, its environment, the purpose it would serve, a great expanding commerce, the multiplied and diversified industries in which millions of people are engaged, and upon whose industry and production many more millions depend for subsistence—all these elements have centered upon the project the lively interest of five of the greatest States of the Union.

The construction of a barge canal from Chicago to Toledo, to carry a part of the immense tonnage of heavy freight from Chicago and intervening points direct to New York, Boston, Baltimore and Philadelphia, without breaking bulk, is, in fact, but an extension of the Erie Canal. Let me remind you, before discussing the merits of this improvement, that Chicago is a thousand miles inland from the Port of New York, the greatest export and distributing center of the continent. A distance of three-fourths of the proposed waterways from Chicago to the seaboard is already actually constructed.

Seven hundred and fifty miles of this great competing highway for future trade is about finished and only 240 miles remain to be constructed, when we shall have competition in freight rates and ample transportation facilities, not only for the grain and meat producing district, but, also, for the greatest manufacturing center of the United States. Of that 240 miles, 120 miles can easily be accomplished by canalizing the Maumee River from Toledo, Ohio, to Fort Wayne, Indiana, and the remaining 120 miles can be cut with little cost through a fairly level country, traversing the rivers and lakes of Northern Indiana to some point on the southern shore of Lake Michigan.

A glance at the map suffices to demonstrate that the proposed barge canal, as an air line route of transportation, would cut off 850 miles from the existing circuitous round trip between Chicago and Toledo, via Lake Michigan, the Straits of Mackinac, Lake Huron, the Detroit River and Lake Erie. Our purpose is to cast the remaining link of the proposed waterway in a size sufficient to float heavy freight from Chicago to New York and the eastern cities, without the expense of time and money incident to re-loading at any point on the line.

The merits of the proposed improvement so impressed the Congress of the United States that it ordered a survey from Toledo, Ohio, by way of the Maumee River, to Fort Wayne, Indiana, and thence to the lower end of Lake Michigan, or by "other feasible route." The friends

of the project base the necessity for it upon two distinct grounds; namely, increased facilities for transportation that shall meet the requirements of constantly increasing production and competition in freight rates. No other reasons need be considered, and in this paper I shall avoid the question of feasibility, specific location west of Fort Wayne or cost of construction.

It has been said that the Upper Mississippi is the "meat basket and bread basket" of the continent. Clustering close around the western terminus of the proposed waterway lie the great States of Indiana, Illinois, Michigan, Ohio and Wisconsin, with more than 18,000,000 of people. Immediately and directly tributary to these lie the States of Minnesota, Iowa, Missouri, the Dakotas, Nebraska and Kansas, with 12,000,000 more, constituting a third of the population of the Republic, which contribute all of their constantly increasing trade to that inland metropolis for distribution. Lying within a radius of 200 miles of Chicago are the richest agricultural regions on this hemisphere. So rich is the territory and so enormous its production that there have been attracted to this great center of wealth all the transcontinental railroads of the country. We are able, with our agricultural products, not only to supply our own market, but to feed the Middle Atlantic and New England States, and still sell nearly a thousand million of products in the world's markets.

WHERE THE MAUMEE RIVER WINDS IN ITS COURSE NEAR ANTWERP, O., JUST EASTWARD OF THE INDIANA BORDER

This section produces an immense output, with many thousands of acres embraced within the area that have not yet produced a dollar's worth of food products. We have scarcely "scratched the soil," compared with what our possibilities are.

I have said nothing yet about manufactures. Of the 18,000,000 of people, living in Ohio, Indiana, Illinois, Michigan and Wisconsin, 10,000,000 dwell in our cities and towns and constitute each city and town a manufacturing center. In the narrow zone through which we propose to construct this highway of trade lie cities of very great commercial and manufacturing activities. Between the termini, Chicago and Toledo, are the cities of Hammond, Indiana Harbor, Gary, East Chicago, Whiting, La Porte, South Bend, Elkhart, Mishawaka, Michigan City, Goshen, Ligonier, Kendallville, Fort Wayne, and Defiance, with numerous smaller cities intervening. No more extensive manufacturing

CONCRETE ELECTRIC RAILWAY BRIDGE SPANNING THE MAUMEE RIVER, BETWEEN WATERVILLE AND "ROCHE DE BOUT," NEAR TOLEDO, O.

district exists than that in which these cities are located. At the foot of that great inland sea, where is focussed the commerce of the Mississippi Valley, are now more than twenty independent, immense iron and steel producing corporations, representing scores of millions of invested capital. There is not a month but what additional capital by the million is invested in manufacturing. From 1905 to 1909, the manufacturing capital in this section increased 46 per cent.

DAM AT GRAND RAPIDS, ON THE MAUMEE RIVER—AN EXAMPLE OF THE PRESENT DEVELOPMENT OF THIS STREAM FOR CANAL PURPOSES

It is admitted by all persons engaged in the transportation of merchandise that the railroads have reached their limit of capacity for freight shipment, because of the impossibility of increasing their terminal facilities. There is not at the present time a manufacturing city in the zone above stated but what is choked with freight seeking an early destination. There is not a point on a road leading eastward out of Chicago and covering this territory where there is not an embargo against some character of heavy freight. If that is the condition now, what will the condition of freight shipments be when we shall have doubled our population, and doubled and trebled the output of our agricultural and manufacturing industries? The roads now in possession and control of the commerce of the millions of people and of the millions of capital invested, absolutely dictate what the people shall pay for their service. They are a unit in their charges and these charges are greater from intermediate points to the same destination than they are from the initial point.

Men who are in a position to form correct judgment say that we shall double our population in the Upper Mississippi Valley in two decades. If so, without the barge canal every possible avenue for shipment will be congested; prices thereby will be affected and all industry more or less stagnated. This wealth-producing region ought not to be handicapped, limited or circumscribed in what it is capable of doing. Its diversified industries, planted thickly between the termini of this important new highway of trade, are constantly taking on new capital. It has been said that there ought to be fair and honorable competition in freight rates between all the transportation systems engaged in the business. If that is so, no course could be pursued by the general government that would so

GUARD LOCK AT DAM ACROSS THE MIAMI AND ERIE CANAL, BELOW DEFIANCE, OHIO—YET MORE EVIDENCE OF CANAL DEVELOPMENT

Photo by Haines, Conneaut, Ohio

A GLIMPSE OF THE HARBOR OF TOLEDO

TOLEDO HAS AN ENVIABLE STRATEGIC POSITION NEAR THE HEAD OF LAKE ERIE ON THE MAUMEE RIVER, WHOSE BANKS ARE LINED WITH GREAT INDUSTRIAL ESTABLISHMENTS AND WHOSE WATERS ARE ALIVE WITH MOTOR BOATS AND STEAMSHIPS.

effectually and completely establish competing rates for the transportation of this great volume of business as the construction of the proposed barge canal, because it would not only penetrate the greatest trade-producing centers of collection and distribution, but it would come into direct contact with more than 80 per cent. of the railroads of the country that now attempt to carry this freight. It is not possible that the interests of these numerous cities, these millions of people, this splendid commercial and rich agricultural region, are to be remitted to the railroads as the sole carriers of their production, when they are now taxed beyond every possible capacity to do the business. The people have not delegated all of their rights to the transportation companies. Among those they have reserved is that of having their merchandise carried to the markets of the world at the lowest remunerative rates, and carried without delay.

We have no quarrel with the railroads. They are an absolute necessity. We want them to carry all the freight they are capable of transporting, but with them we want sufficient additional facilities to transport the products raised and manufactured in the region through which they run, when they shall have reached their limit of service. If we shall have the assurance of adequate common carrier service, there is no limit to be placed upon the development of great sources of state and national wealth in the territory bordering on the Great Lakes.

In what position will the numerous distributing Atlantic Coast cities be if it shall happen that in the not distant future the trade for exports from the Mississippi Valley shall go by way of the Great Lakes, into the Georgian Bay, into the canal that the Canadian government proposes to construct, out into Lake Ontario and down the St. Lawrence to the market cities of the world? Are the export cities on the coast anxious to regain and keep the grain trade prestige they once had? And do they realize the tremendous importance that the loss of this world of traffic would mean to their section? The Builder of this continent of ours left possible but two routes for the people living in the upper Central States to get to the world's market with their surplus product. One by way of the Gulf of Mexico and the other by way of the barge canal and the Erie Canal to the coast cities. The Gulf route is impracticable, because when we reach New Orleans, a thousand miles south of us, we are still more than a thousand miles farther away from New York and Boston and Philadelphia than when we started.

The Erie Canal, without the assistance and the carrying trade that we can give her, will not carry ten per cent. of the freight it is capable of carrying, once this western extension is completed.

Underwood & Underwood, N. Y.

FISHERMEN MENDING THEIR NETS AT THE JORDAN'S ENTRANCE TO THE NORTH END OF THE SEA OF GALILEE

Set deep in the Palestine hills, of hallowed association, is the Sea of Galilee, the shores of which, at this time of the year, become verdant with tropical vegetation, although presenting a barren and desolate appearance at other seasons. Although measuring in its extent but sixty-four square miles, the Galilean Sea, according to geologists and historians, covered a much wider area in the time of Christ, who walked upon its waters and here accomplished the miracle of the feeding of the multitude with a few fish. The shores of the Sea are rich in archæological remains and foundations and scattered stones cover the slopes and the flat valley below. In the midst of ruins near a rugged gorge on the western side are the remains of a synagogue of richly ornamental style constructed of black basalt. The foundations of another splendid synagogue, measuring 75 feet by 57 feet and built in white limestone, have been excavated. The modern Arabic name of the Sea is Bahr Tubariya.

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EASTER PILGRIMS THRONGING THE "VIA DOLOROSA," JERUSALEM

IT IS A MOTLEY, BUT A DEVOTEDLY REVERENT ASSEMBLAGE OF THE FAITHFUL FROM DISTANT LANDS THAT FOLLOWS THE "PATH OF SORROWS," LEADING FROM PILATE'S TRIBUNAL TO DREAR GOLGOTHA, TO TARRY IN PENANCE AT THE SEVERAL "STATIONS" WHERE CHRIST MOST SUFFERED

© *Underwood & Underwood*
THE FIRST STATION OF THE CROSS. ON THIS PAVEMENT OF SQUARED STONES CHRIST STOOD BEFORE PONTIUS PILATE

ALL roads lead to the Holy City at Easter time. Thousands of pilgrims journey from Syria, from Constantinople, from the Macedonian States, from Russia, Greece and the Peloponesus, from Egypt and Abyssinia and from distant Sicily, often suffering severe hardships and hunger, and more than one perishing by the roadside. They come to walk the Path of Sorrows trod by the Nazarene, to worship at the shrines of the Holy Sepulcher, shrines that girdle the very Rock of Calvary.

The streets of the City are lined with poor men and women, begging and singing; with praying pilgrims; with venders of crosses and chaplets. A maze of chapels and caverns surrounds the sacred altar, covering the stone of the Sepulcher—a great marble altar laden with silver lamps. The altars of the various confessions are so mixed up that there is a continuous marching of priests and processions. The darkness is everywhere studded with the lights of myriads of little silver lamps hanging from the arches and the thousands of jets of flame from the candles in the hands of the worshipers. Beyond is the Sepulcher, enclosed in marble amid ikons and lamps of gold, and all the pilgrims kiss the cover of the tomb, an eternal procession.

No less brilliant and versatile a chronicler than Pierre Loti, in an account (in the *Christian Herald*) of his visit to Jerusalem at Easter, describes this Path of Sorrows:

"Here were the ruins of what had been the palace of Pilate, for there have been less changes here than in the neighborhood of Calvary. Here is the ancient Roman pavement, here are ancient walls by which Jesus must have passed.

"The road is darkening in the dying light of day. We hear the chants coming from the Chapel of St. Anne. The road runs upwards,

© *Underwood & Underwood*
IN SUPPLICATION BEFORE THE FIRST STATION, NOW THE CENTER OF A MILITARY BARRACKS FLANKING THE CASTLE OF ANTONIA

THE EIGHTH STATION OF THE CROSS

THE BLACK CROSS IN THE WALL OF THE GREEK MONASTERY OF ST. CARALOMBOS, SEEN THROUGH THE ARCHWAY, MARKS THE EIGHTH STATION, WHERE CHRIST IS SAID TO HAVE ADDRESSED THE WOMEN WHO ACCOMPANIED HIM

© *Underwood & Underwood*
GREEK ORTHODOX MONKS KNEELING AT SECOND STATION, MARKED BY PORTION OF ANCIENT WINDOW AT LEFT

narrow and steep, between two ancient walls, by great arches. Other streets cross it, seeming dead, without windows, or other opening. *Hic flagellavit*, says a marble tablet set in a doorway. Here He was flagellated. This is the Chapel of the Flagellation, the beginning of the Road. Here is the Turkish prison, built upon the foundations of Pilate's palace, first Station of the Cross. All the other Stations as far as Calvary are marked by inscriptions or columns.

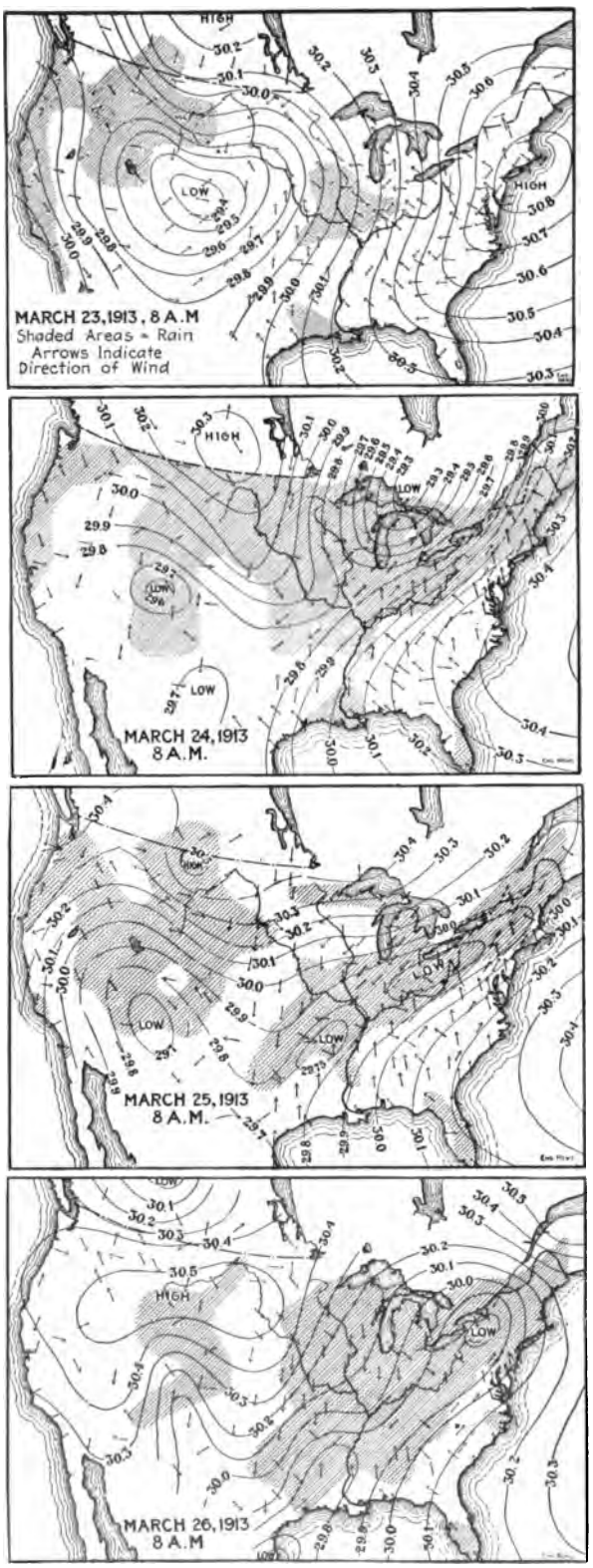
"I pass beneath the Arch of Ecce Homo, and hear the Daughters of Zion singing the praise of the Saviour. The way turns and twists its sad length, ever ascending. I reach the Seventh Station, the gate through which Jesus passed toward Calvary, and then past all the rest to the Sepulcher.

"But I wanted to visit Gethsemane, seen from a distance only. * * * * Other places have been disputed and questioned, but concerning Gethsemane there is universal agreement. The little altars, very old and simple, do not disfigure this grotto, which does not seem to have changed in nineteen hundred years. * * * Here the apostles slept while Jesus went away into the garden to pray. And here amid the flash of torches was He taken * * * * Thence we traversed the very path back to Jerusalem along which Jesus must have walked on just such a night as this, facing his fate. There was the same moon shining upon us, the same deep shadows cast by the giant olive trees. The same breezes blew into our faces, and in the light of memory we could see that frail body struggling with the weight of impending doom, yet passing firmly onward in the night.

"When I left Jerusalem I could not but feel the spell of all I had seen. I felt that the Holy Sepulcher was indeed the soul of the city."

© *Underwood & Underwood*
DEVOTEES OF EVERY CLIME KNEEL IN CLOSE QUARTERS, GUARDED BY TURKISH SOLDIERS, ARMED AS IF FOR MASSACRE

BY TEMPEST



Courtesy Engineering News

THE three great cyclonic storms that swept over the country in the latter part of March—with the hurricanes, tornadoes and torrential rains by which they were accompanied and the floods by which they were followed—scattered death and destruction over a territory larger than that of any nation in Europe, except Russia, and wrought a greater damage to property than was caused by the Chicago fire or the San Francisco earthquake. The first frantic appeals sent out for help indicated that the loss of life would also be greater than that caused by any other disaster in the country's history, but happily this proved to be untrue, the number of lives directly lost by storm and flood being only about one-half as great as at Johnstown and one-tenth as much as at Galveston.

The first of the three cyclonic storms made its appearance in British Columbia on March 17, swung southeastward into Colorado, then turned sharply to the northeast and passed down the valley of the St. Lawrence to the Atlantic Ocean. The second was formed in Utah on March 19, swept through New Mexico into Texas, and then, turning still more sharply to the northeast, also went down the St. Lawrence Valley. Before the second storm was fairly out of the way a third one formed, on March 22, in Nevada, and moved, first eastward across Utah and Colorado, then northeastward through Nebraska, Iowa and Michigan and on down the St. Lawrence in the track of the other two.

Friday, March 21, was an unlucky day for practically the entire country east of the Rocky Mountains. Gales raged far and wide, observed velocities being reported of 64 miles per hour at Memphis, Tenn., 84 miles at Toledo, Ohio, and 88 miles at De-

AND FLOOD

troit, Mich., and Buffalo, N. Y. Blizzards west of the Mississippi tied up railway traffic, telegraph and telephone wires were blown down, roofs torn off and plate glass demolished by the acre. Deaths from falling chimneys were reported from Michigan to Texas, and a number of small towns in Missouri, Arkansas, Tennessee, Louisiana and Alabama were demolished by tornadoes, with a loss of some 50 lives and a much larger number injured.

A cyclone is a general storm, which may be from 100 to more than 1000 miles in diameter, and in which the winds revolve around an area of calm as a center. This calm area moves forward from west to east at a rate which may be as much as 40 or 50 miles per hour. A tornado is defined by the Chief of the Weather Bureau as "a violent revolving local storm of small diameter and great intensity." Tornadoes are often developed in connection with a cyclone, like individual eddies in a swiftly moving stream. Tornadoes, in the northern hemisphere, occur almost entirely along the southerly edge of the cyclone, are usually of small diameter and run a course of only a few miles. No method has ever been devised for measuring the velocity attained by the wind in a tornado. It must be at least 200 miles per hour, and some writers declare that certain phenomena—such as the driving of straws into an oak plank—can be accounted for only on the theory that the velocity is from 1500 to 1800 miles per hour.

On the night of Easter Sunday, March 23, tornadoes occurred in Nebraska, Missouri, Iowa, Illinois and Indiana. Many buildings were wrecked and several lives lost in the northwestern part of Chicago and still greater damage was done at Terre Haute, Ind., and in the village of Prairie-

HOUSEHOLDERS SEARCHING RUINS OF THEIR HOMES FOR BODIES AND VALUABLES NEAR HAMILTON AND THIRTIETH STREETS, OMAHA

JUDGE W. W. SLABAUGH, A PROMINENT OMAHA LAWYER, COLLECTING HIS BELONGINGS AFTER THE TORNADO WRECKED HIS HOME

Photos by Underwood & Underwood, N. Y.

WHAT WAS ONCE THE TOWN OF LOWER PEACHTREE, ALA. SIX HOUSES STOOD WHERE THE X'S ARE

ton, six miles south, where 25 deaths were reported. The heaviest toll was taken, however, by the tornado which burst upon Omaha, Neb., a little before seven o'clock in the evening and cut a swath of ruin six miles long, and of the extraordinary width of from a quarter to a half mile, before it crossed the Missouri River to spend the remnants of its fury upon the neighboring city of Council Bluffs, Ia. One hundred and thirty lives were snuffed out, scores and hundreds were injured, more than 1700 houses damaged, 700 of which were either completely destroyed or so badly wrecked that they must be rebuilt, and 2500 to 3000 people were rendered homeless, some of whom lost everything they possessed.

It would seem that this was enough and more than enough, but all that has been outlined up to this point was only a prologue to the tremendous tragedy which was to follow. In the abridged Weather Bureau maps which appear herewith, and which are reproduced by the courtesy of *Engineering News*, the isobars (or lines of equal pressure) and wind arrows are given, and rain areas are indicated by shading, but the isotherms (or lines of equal temperature) are omitted for the sake of clearness. The maps, which indicate conditions at 8 a. m. from Sunday, March 23, to Wednesday, March 26, show that the low-pressure area became more concentrated as it moved to the northeast. It was accompanied by a downpour of rain which has no recorded equal in the United States for volume, rapidity and long continuance. The forecaster of the Weather Bureau states that "there have been heavier rainfalls in restricted areas before, but such a heavy precipitation extending over three or four days in such a large area is unprecedented."

As summed up by *Engineering News:* "An extraordinary rainfall occurred over the whole north-central area from Illinois to New York, with less heavy rain southwest and east of this area. These rains began Saturday, becoming concentrated Sunday and Monday, and continuing more or less until Thursday, March 27. The north half of the valley of the Ohio River was deluged. Roughly stated, over 5 inches of rain fell in three days on a region of about 150,000 square miles between the Great Lakes and the Ohio. There was a precipitation of from 1 to 6 inches over the entire territory from the Missouri River east to the Alleghenies, and from the southern tier of states to the Canada line."

This unprecedented downpour fell upon a soil unable, because already saturated, to absorb any additional moisture, and the result was that every stream from the Wabash, on the Illinois-Indiana boundary line, to the Connecticut, was flooded, and on most of them all previous records were broken. Ft. Wayne, Huntington, Wabash, Marion, Elwood, Kokomo, Winchester, Muncie, Richmond and other Indiana cities reported damage from floods, the greatest loss of life occurring at Indianapolis, Brookville and Peru.

But the center of the terrific downpour was in Ohio, a precipitation of 9 inches in three days being reported from Wooster, 10.6 inches from Marion and 11.16 inches from Bellefontaine. Fremont, Findlay, Tiffin, Akron, Cleveland and other cities on the Lake Erie watershed reported serious flood conditions, the Cuyahoga River at the head of navigation in the latter city, 5½ miles from the lake, reaching a height of 19½ feet above the normal stage. Piqua, Dayton, Middletown and Hamilton on the great Miami; Delaware, Columbus and Circleville on the Scioto; and Zanesville on the Muskingum bore the brunt of the disaster. The death roll for the State is set down at 454, of which Dayton furnished 150, Columbus 89, and Hamilton 72.

Youngstown on the Mahoning, in eastern Ohio, and Sharon and Newcastle on the Shenango, in western Pennsylvania, also suffered heavy loss from high water. The Genesee, at Rochester, was higher than at any time since 1864, the Hudson at Troy and Albany reached a stage higher than ever before recorded, and the cities on the Connecticut and scores of places which cannot here be named suffered losses, serious in themselves, but which are overshadowed by the destruction of life and property in Ohio cities.

To all that has thus far been mentioned must be added the losses in the cities along the Ohio River, for every city on both its banks from source to mouth was flooded. In Pittsburgh the highest point was 30.4 feet, which is five feet below the record stage, 35.5, which was reached in 1907.

CITIES BOTH EAST AND WEST SUFFER HEAVY LOSS FROM FLOODS

1 Record-breaking Rise in the Hudson at Troy, N. Y. (*Underwood & Underwood.*)

2 Burning wholesale district of Dayton, showing lone member of the fire department. There was no smoke from the fire. Great clouds of steam rolled from the burning buildings. At the time this picture was taken this district was under water from 3 to 15 feet deep. Looking east in Third Street from Jefferson. (*Eugene Cour, Chicago.*)

3 Crowd of refugees and relatives watching rescuers as they arrived at the home of Mrs. May Mains, West Indianapolis, Indiana, with flood victims from No. 16 School. Taken from C. H. & D. R. R. tower house. (*Eugene Cour, Chicago.*)

4 Showing the inundated section in the vicinity of the Market Street viaduct, Youngstown, O. (*Underwood & Underwood.*)

Underwood & Underwood, N. Y.

TO SAFETY BY CABLE—AN INCIDENT OF THE DAYTON FLOOD

LIFE LINES HASTILY STRETCHED ALONG THE STREETS SAVED MANY LIVES. WHEN THESE WERE OVERFLOWED, THE TWO MEN SHOWN IN THE PICTURE CLIMBED A TELEPHONE POLE AND MADE THEIR WAY TO SAFETY ALONG THE CABLES

At Cincinnati the river stopped at 69.8 feet, as against 71.4 feet in 1884. But practically every other point on the river reported flood heights in excess of all previous records.

The total value of the property destroyed can never be known to a certainty. Governor Cox, of Ohio, estimates the loss in that State alone at $348,000,000, divided as follows: railroads, $103,000,000; traction lines, $20,000,000; counties, $45,000,000; cities, $15,000,000; buildings, $50,000,000; merchandise, $60,000,000; public utilities, $25,000,000; furniture, clothing, jewelry, etc., $15,000,000; miscellaneous, $5,000,000. The estimate of the Red Cross is nearly $100,000,000 less, or $250,000,000. Either figure is large enough.

Courtesy Washington Post

NECESSITY OVERRULES CONVENTIONALITY—DAYTON WOMEN IN RUBBER BOOTS AND OVERALLS HELP TO CLEAN STREETS

How hard the railroads were hit may be judged by the fact that for a time through service was suspended on every east and west line in Ohio, except on the Lake Shore & Michigan Southern, which runs close to the shore of Lake Erie. Tracks, sidings, heavy bridges of steel, concrete or stone, yards, stations, shops, terminal buildings, signal apparatus, interlocking machinery, telegraph lines, rolling stock, lumber and other expensive materials of many kinds—all were wrecked or carried off by the torrents. It will be weeks before the service can be restored to its former efficiency, and months before repairs and rebuilding can be completed. The almost total cessation of railway communication—which was not confined to Ohio but included much of Indiana and portions of West Virginia and Pennsylvania—made the work of rescue and relief doubly and trebly difficult. Something of the invaluable serv-

Courtesy Washington Post

THREE NOTABLE FIGURES IN THE WORK OF RELIEF

From left to right the figures are: Maj. Gen. Leonard Wood, Chief of Staff, U. S. Army; Lindley M. Garrison, Secretary of War; and John H. Patterson, President of the National Cash Register Co., and Chairman of the Relief and Citizen's Committees of Dayton. When the flood came everything and everybody connected with the great plant of the Cash Register Co. was devoted to the work of rescue and relief. Boats hastily built saved hundreds of lives. Mr. Patterson himself repeatedly stood for long intervals in water up to his hips and once leaped into a boat and brought a whole family to safety. Martial law was proclaimed by Governor Cox and the militia were under the orders of Mr. Patterson, who was for days practically the dictator of Dayton. Before the waters had subsided he was planning to prevent floods in the future and has secured the appointment of a Board of Army Engineers to study the problem.

ice rendered by motor cars and motor trucks when the locomotive was helpless is told elsewhere in these pages.

The greatest loss of life and property occured at Dayton, a thriving city of some 135,000 population, which lies on both sides of the Great Miami River, about 65 miles north of Cincinnati. Three smaller streams join the Miami just above the city, the watersheds of all four lying within the territory in which the rain-fall was from 6 to 11 inches on the level; under such conditions a flood was inevitable. Dayton had suffered from floods before and had constructed levees designed to hold back a stage of 23 feet, but even if these had not broken, as they did on the morning of March 25, they would have been overtopped by six feet.

The flood would have been just as deep if the levees had held, but there would not have been that first terrific rush of water which swept down Main Street so swiftly that nothing less speedy than a high-powered motor car could escape it. While one taxicab driver was cranking up the muddy water smothered his engine, drove him first into his machine and then to the top of it, and a few minutes later compelled him to swim for his life. Street cars were overturned, plate glass windows were smashed and stocks of goods swept into the street. Hundreds of horses swam frantically about

Underwood & Underwood, N. Y.

POLICE AND VOLUNTEERS WITH LIFE LINES FOR RESCUE OF PEOPLE CARRIED DOWN FLOODED STREETS ON WRECKAGE

Courtesy Washington Post

LOOKING ACROSS THE OHIO FROM COVINGTON, KENTUCKY, TO CINCINNATI

THE OHIO RIVER AT CINCINNATI REACHED A STAGE OF 69.8, AS AGAINST 71.4 FEET IN 1884. AT PRACTICALLY EVERY OTHER POINT ON THE OHIO THE FLOOD OF 1913 WAS THE HIGHEST ON RECORD

trying to climb on doorsteps or force their way through windows. One dead horse was found, after the water receded, lying on top of a grand piano in a parlor.

Hundreds of pedestrians were swept off their feet and thousands of human beings were sent madly climbing up telephone poles or into trees, or forced first to the upper stories of their houses and later to the roofs. Many of the smaller and frailer houses were crushed by the first rush of waters, while others were lifted from their foundations and whirled away by the angry yellow flood; some carried their human freight to safety when they grounded in shallower water, others were dashed to pieces against more substantial buildings or one of the bridges which spanned the Miami.

The terrors of the day were multiplied with the coming of night, when 50,000 to 60,000 people in Dayton alone were marooned without heat, or food, or water fit to drink, or any light but that from the fires which there was no way to check and which, to the anxious watchers, seemed about to sweep the whole city and destroy all that the waters had left.

The scenes of ruin revealed when the waters receded were appalling. Throughout the flooded area homes, factories and stocks of merchandise, where not completely wrecked or swept away, were water-soaked and covered inches deep with slimy mud. Dead animals strewing the streets, polluted water supplies and broken sewers threatened the coming of pestilence. The task was not ended when the living had been rescued and fed and the dead had been decently buried—it was just begun. More than 100,000 people are homeless in Ohio alone.

But if the task is tremendous, so also are the resources available for its doing. There were many men who worked untiringly to save the lives of others until they lost their own. There are many more who are ready to help rebuild the ruined homes, repair the ravages of flood and fire, and not merely restore conditions as they were, but make them better than before. The National Government, the State Governments and the Red Cross are all enlisted in the work—but the greatest resource of all is the unconquerable courage of the survivors of the disaster themselves.

CENTURY-OLD PRECEDENT BROKEN

© *Harris & Ewing*

BRIDGING the gap that separates the present and the past, and reviving an old custom that was abandoned when Thomas Jefferson came to the chair of state, President Wilson is here seen reading his address to the Houses of Congress in the Hall of the House of Representatives on Tuesday, April 8, making an epochal occasion in the life of the American republic.

The address, as it must be called, was nevertheless a message, in the sense that it was a clarion call to the representatives of the people to enact tariff legislation at an early date, to the end that the industries of the country might adjust their business in conformity to the changed conditions.

Not as a cog in a machine, not as an impersonal political entity, nor "as a mere department of the Government, hailing from some isolated island of jealous power," but as a President, "who is a human being, trying to co-operate with other human beings in a common service," Woodrow Wilson went to Congress on this very memorable occasion that is still the talk of the Nation, thereby winning for himself an exalted place as a doer of things and not a dreamer of them.

VIEWS & REVIEWS

The Human Side of the Floods

GREAT disasters bring out the best and the worst in human nature. They strip off the veneer of conventionality and show whether the fibre of the underlying character is sound and straight or warped and rotten. From the cities recently stricken by storm and flood there come stories of sorrow and suffering to wring the stoutest heart, tales of grasping selfishness and open-handed generosity, of courage and of cowardice, of tragedy and comedy, of hope and despair, of situations more dramatic than were ever portrayed on any stage.

A railway man in Dayton, who was marooned in his office for three days and nights, tells of seeing two men, a woman and a little girl who clung for hours to the branches of a tree, while pouring rain and driving snow drenched their garments and chilled them to the bone. Presently a house drifted down and lodged within reach, and the men, after beating a hole in the roof with their bare hands and placing the woman and girl inside, took off their clothing and passed it down to them. When the rescuers came in boats the next day they took away the woman and the child, alive—but left behind the men, lying dead and frozen on the roof. No braver deed was ever done upon a battle-field.

A few looters were shot, among them one with heart even blacker than his face, who had in his possession a woman's hand, severed at the wrist, the fingers of which were ablaze with precious stones. But for every one like that there were a hundred ready to risk their lives to save others. The coming of danger and the beginning of the work of rescue were practically coincident. Every rope within reach was put to use, every available boat was sent speeding on a mission of help. One young man is said to have saved over 200 lives with his motor boat before he lost his own. Two athletic brothers in Dayton saved 200 people with their canoes. That they themselves are alive is due to Providence or fate, for both dared death again and again. National guardsmen in Columbus, on duty all day and sometimes half the night in drenched clothing, slept on the stone floors of the State House corridors and went at it again next day. Members of the Naval Reserve, from Toledo, worked 71 hours without rest or sleep.

People living adjacent to the flooded territory gathered up supplies and rushed them by all available methods to the sufferers, and throughout the whole country contributions of money, clothing and provisions began pouring in upon the agents of the Red Cross. More than $1,500,000 had been turned into the treasury of this splendid organization when these lines were written, and the funds were still coming in.

A SPECIAL word of appreciation is due Mr. John H. Patterson, President of the National Cash Register Company. Fortunately for Dayton, this great plant, which covers an area equal to eight or ten city blocks, was on high ground which the waters did not reach. When the

flood came Mr. Patterson ordered all business suspended and everything and everybody about the institution was turned over to the work of rescue and relief. Boats were turned out from the carpenter shop at the rate of one every five minutes until 200 had been built and sent out to take people off of roofs or out of second-story windows. Mr. Patterson himself repeatedly rushed into the water to help some one struggling toward safety, and once leaped into a boat and saved a whole family. The same executive ability that enabled him to build up a business so large that the Government prosecuted him for violation of the Anti-Trust laws, made him the natural choice for Chairman of the Relief and Citizen's Committees, and for days he was practically the dictator of Dayton. Everything centered in and radiated from the plant of the National Cash Register Co., with Mr. Patterson as the *deus ex machina*. Even while the relief work was going on he was looking ahead and seeking national aid to prevent a recurrence of the disaster. Whatever the Government may think of some features of his business activities, he deserves unstinted credit for his wholehearted and efficient help in Dayton's great disaster.

Dayton's Leading Citizen

Some years ago, at the Imataca iron mine on one of the labyrinthine channels in the delta of the Orinoco River, in Venezuela, some Guaraunos Indians were employed in making thatched roofs. When one of them fell off a ladder and broke his leg his companions promptly moved him a little to one side—because he was in their way. The contrast between this incident and the outpouring of sympathy and help for the sufferers from the floods measures the difference between barbarism and civilization.

PRESIDENT WILSON brushed the red tape completely aside and ordered troops, tents, rations, medical and surgical supplies, life boats and crews, Army Engineers and officers of the Public Health Service to the scene of the disaster, confident that Congress, when it should meet, would sanction this rushing of help to the suffering thousands in advance of direct authorization. Secretary of War Garrison and Maj. Gen. Leonard Wood, Chief of Staff, went to the stricken cities as quickly as disorganized railway communication would permit, and President Wilson was ready to follow if his presence seemed advisable. All along the line action was swift and decisive. For instance, when the Commandant at Fort Omaha learned of the damage caused by the tornado he instantly ordered out his men to co-operate with the police and the militia in rescue work and guard duty.

Red Tape Properly Discarded

HOW vitally important the railway is to the industrial and commercial interests of the Nation could only be fully realized through the almost complete stoppage, over a wide territory, of railway operation following the floods. Although the railways suffered loss and damage greater than that of any other single interest, the first thought of the men in charge of them was to do all in their power for the work of relief. Wherever train movement was possible, supplies for the sufferers were given the right of way and carried free of charge. Stations, shops and other railroad buildings were thrown open to shelter the homeless, and railroad restaurants dispensed food gratis. Railway corporations may have no souls, but the men who

Credit Due the Railroads

operate the roads certainly have. The roads not only helped the public but each other. Wherever a piece of track was fit for operation it was available for detouring trains of other roads. Credit must also be given for the splendid energy shown in beginning and carrying on the work of repair. Almost before the floods had reached their crest the Baltimore & Ohio, for instance, had assembled 6,000 men between Parkersburg and Pittsburgh who were ready to begin the work of reconstruction at the earliest possible moment.

Most gratifying of all to every American who believes in and loves his nation is the unconquered and unconquerable spirit manifested by the people of the states and cities ravaged by storm and flood. Omaha, with 130 dead, hundreds more injured, 3,000 homeless, 700 houses completely wrecked and 1000 more badly damaged, sent out word that she needed no outside help. Merchants put up signs as soon as they could get into their water-soaked establishments, announcing that business would be resumed as soon as new stocks could be brought in. Manufacturers, for the double purpose of getting into operation again and giving employment to those sorely in need of it, set every available man to cleaning up, while some, like Griffith & Wedge, of Zanesville, announced that they intended to replace their old machinery with new and fit up both offices and shops in more modern style, in order to take care of the bigger business that they feel sure they are to get. The waters had hardly receded when Governor Cox of Ohio—who measured up to all the requirements of the sudden and tremendous emergency which confronted him—sent out from Columbus this ringing statement: "Refreshed by the tears of the American people, Ohio stands ready from to-day to meet the crisis alone."

EVERYBODY agrees that everything possible ought to be done, but there is a wide difference of opinion as to how much can be done and just what ought to be done, to prevent a recurrence of these disastrous floods. The floods in the rivers have been followed by a veritable flood of suggested plans, ranging in value from those put out by crack-brained cranks to those advocated by men of ability who have given the subject thoughtful attention.

Plans for Prevention of Floods

One man sought the support of NATIONAL WATERWAYS for his scheme to prevent overflows in the Mississippi Valley by building a series of concrete conduits from the neighborhood of Cairo to the Gulf of Mexico, into which, he insisted, the flood waters should be poured instead of being compelled to force their way as at present. He thought five of them, 100 feet wide and 10 feet deep, would be enough—but maybe it would take 12. No, he hadn't figured the cost—he would leave that for the engineers.

There is a general agreement that further encroachments on our rivers must be stopped and a strong advocacy of the deepening, widening and straightening of channels. Work of this kind on the tributaries would send their storm waters more swiftly down to the main streams and make flood stages in the latter higher than they are at present. Others advocate the holding back of rainfall by reservoirs and reforestation. In succeeding numbers of NATIONAL WATERWAYS there will be presented articles from prominent men who favor different methods. The problem is complicated and difficult; the solution, if found at all, will be found only after a thorough study by experts; and the remedy, whatever it is, is certain to be costly.

IN THE decision rendered in the case of Augusta and Savannah Steamboat Company vs. Ocean Steamship Company of Savannah, *et. al.*, the Interstate Commerce Commission uses the authority, conferred upon it by Section 11 of the Panama Canal Act, to establish through routes and maximum joint rates between rail and water lines. The Ocean Steamship Company and the Merchants and Miners Transportation Company, which operate steamship lines between Savannah and New York, Philadelphia and other North Atlantic ports, had joined with the Augusta and Savannah Steamship Company up to 1905 in making joint rates from Augusta to interior destinations reached from the North Atlantic ports named. Since that date they have refused to participate in the making of such rates, but must now do so.

Commission Applies Section 11.

The contention of the defendant steamship companies that they were not subject to the authority of the Interstate Commerce Commission was overrruled because it was shown that they participate in through rates on a joint route made up of rail from Augusta to Savannah, steamship to New York or other port, and rail to destination. Their further claim that they were willing to make a joint rate in case this was made the same by the complaining steamboat company as by the rail-water-and-rail line mentioned, called out these words from the Commission:

> "If these carriers are allowed to insist that this steamboat line shall make no lower rate than is made by the rail line, the inevitable result must be the going out of business by the steamboat company. If the railroads serving Augusta can say, as they are attempting to here, that the water rate shall be no less than the rail rate, then they can say that Augusta shall not be given the legitimate advantage of its location. Not only can they prevent any further reduction in rates at that point, but they can advance those rates which water competition has already secured."

The decision in this case, which was presented on behalf of the complainant by Mr. H. S. Kealhofer, Manager of the Traffic Bureau of the Augusta Chamber of Commerce, is of importance not only to Augusta but to every city located on an interior waterway.

THE 1913 edition of the Good Roads Year Book of the United States, which has recently been issued by the American Highway Association, shows that the proportion of improved roads increased from 8.66 per cent. at the end of 1909, to 10.1 per cent. on December 31, 1911. The net gain of 1.44 per cent. does not look very impressive in terms of percentage, but it means that in the two years named over 34,000 miles of improved roads were constructed in the United States, or 10,000 miles more than the total length of national roads in France.

Progress in Building Good Roads

The Year Book shows $137,000,000 of state road bonds authorized, and reports from about 75 per cent. of the counties in the United States give $156,500,000 of county bonds outstanding, on January 1, 1913. Reports from all counties would probably bring the total up to $350,000,000. Bonds amounting to ten or fifteen million dollars, voted in 1912, are not yet issued.

S. A. THOMPSON.

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MOTHER NATURE'S "FIRELESS COOKER AND THERMAL BATHS," AUCKLAND, NEW ZEALAND

Maoris who live in the geyser region two miles southeast of Auckland allow Mother Nature to do their cooking for them. No need for them to build a fire, a box or a basket or a bag, depending on what they are preparing, is all that is necessary. They sink the receptacle in the hot, moist mud over a steam hole, making an admirable oven. Besides cooking their meals, the women do their washing in these baby volcanoes.

The government of New Zealand controls all the geyser region, with the wonderful health-producing springs, and maintains hotels and sanitoriums at the various spas. The springs are declared to possess the most wonderful healing qualities in the world, and the charges fixed for their use are moderate.

In the smaller picture the young ladies are shown enjoying a Turkish bath *a la mode*. The water "tap" is from a convenient spring. The larger picture is of three Maori women waiting for their meat and potatoes to cook. They are hospitable people and invariably invite strangers to dine with them. Although they are warmly clad, they go barefoot, as the ground is extremely warm from the subterranean heat. It will be observed that the woman holding the baby is [illegible] a pipe, the entire race being inveterate users of tobacco.

The first of a connected series of Temples (dedicated to the Sun) in the head & body of the Sphinx.
14 ft wide by 60 ft Long
Pyramid of Khafra
The Main Temple, filling the body of the Sphinx is connected by tunnels with other temples & tombs at various directions.
Horizon Pyramid, supposed to contain the tomb of Menes — the first historical Pharaoh of Upper & Lower Egypt

HARVARD MAN REVEALS SECRET OF THE SPHINX

Through the courtesy of the *London Sphere* this graphic drawing of Mr. G. Bron is presented to NATIONAL WATERWAYS' readers. This diagrammatic view is of the remarkable discoveries now being made by Professor G. A. Reisner Egyptologist of Harvard University. He is unveiling a series of hidden temples within the natural rock of which the Sphinx is formed. The drawing given above is only approximate in its details, as the measured drawings now being made by the explorer are not yet available. The temples and stairways are, however, shown in their relative positions. Not only is the head of the Sphinx occupied by two small chambers, one superimposed above the other, but the actual body of the Sphinx is also occupied by a larger pillar-lined temple with passages leading off in several directions. The actual tomb of Menes, the great but mysterious founder of remote Egypt, is also supposed to be within the Sphinx. The most remarkable discoveries may be looked for at any time.

AUTOS AS LIFE-SAVERS AT DAYTON

By HARRY A. TARANTOUS

RACING ahead of the raging torrent of the overflowing Miami River, in the awful hour of inundation at Dayton, swift modern touring cars fulfilled a public service that may be likened to the "Ride of Paul Revere." Automobile experts and dealers the country over have been attracted by the showing made by the vehicles in reducing the toll of human life exacted by the waters. Not only in Dayton did the motor car show its mettle, but also at Indianapolis, Columbus and other cities on the banks of the Ohio, Wabash, White and Miami.

As the first surging, seething mass of water rushed down Main Street, in Dayton, motor trucks and touring cars were hastily pressed into service and sent speeding through the broad thoroughfare ahead of the flood. Many small cars, unable to attain a speed of fifty miles an hour, were overtaken by the deluge and overturned, their drivers and occupants, in some cases, being drowned or dashed to death against the buildings. But the big autos contrived to spurt ahead and maintain their lead, while their operators kept their sirens sounding constantly as they called frantically to the crowds that heard their words with blanched cheeks, "The flood is coming!" "The flood is coming!" Thus warned, hosts of people were enabled to gain upper stories of buildings or reach a higher level before the angry waters bore down upon them.

It was not only at the onset of the flood that the autos were invaluable, for after the water had attained a stage of four feet and men, horses and other living creatures were perishing, the mighty, throbbing motors spelled safety to hundreds and thousands who otherwise would have lost their lives. Trains, trolley-cars and horse-drawn vehicles of every character had been reduced to absolute helplessness as though swept from the face of the earth, but the automobiles plugged and plugged until a way was made to pathetic little groups of survivors in sore need of help—and carriage to safety!

As the great number of cars regularly maintained for pleasure driving and business purposes at Dayton proved to be of the utmost use, so likewise, cars which were hurried to the city from nearby centers rendered prompt and efficient aid.

Some of the cars had to plow through three feet of water in order to get out of the flooded area. Most of them got through safely, but a number were caught in the already fallen trolley wires, and held fast. Others could not get traction on the slippery streets. Often the water got into the carbureter, and under such conditions motor operation is impossible. Then it only remained for the driver to swim to a place of safety and leave the motor car to its doom.

After the water had left the streets of the city of Dayton, the real work of saving was begun. People who had been forced to the housetops for protection were taken to places of shelter. Motor cars rushed about the streets, carrying twice as many people as they ordinarily would, and transported them to towns nearby. From those who remained "Food!" was the cry, and again the motor car was the benefactor. Cities on all sides gathered up great quantities of supplies, but these supplies could not be sent to Dayton by train. What the locomotive could not do was accomplished by motor cars and motor trucks which came speeding from all directions to the relief of the famishing thousands.

As soon as the directors of the Speedwell Motor Car Company, in North Dayton, heard that water was fast filling the streets, every available motor was thrown onto a chassis and hurriedly put into service. In all, the Speedwell Company sent seventy touring cars and ten motor trucks through the streets of Dayton to pick up those who had been unable to get assistance. One batch of Speedwells went immediately to the hospitals and carried many invalids to safety.

Nor were the Speedwell directors alone in their great work. The Stoddard-Dayton Company, also in Dayton, rushed all available cars in the factory to the stricken people. When the news reached Spring-

"PASS THIS RELIEF CAR" WAS THE PLACARD BORNE BY EVERY AVAILABLE MOTOR CAR. WITH SIRENS SCREAMING AND DAUNTLESS DRIVERS AT THE WHEELS, THE MOTOR CARS SPRANG FEARLESSLY TO THE TASK OF RESCUE AND WARNING, BUT DESPITE THEIR EXPRESS TRAIN SPEED THE MAD RUSH OF THE ON-COMING WATERS WAS EVEN MORE—

field, the Kelly-Springfield Truck Company and the Packard Motor Car Company's agent there sent, together, about fifteen trucks. These traveled under their own power from Springfield to Dayton in record time, and aided greatly in the work of rescue and relief. Every individual owner who was able to get his machine out of the garage made his car a public conveyance.

Every motor car running about the streets of Dayton after the floods had receded bore a sign: "Pass this Relief Car." The few horses left were used to haul away the drifts of sand and dirt which were deposited on the thoroughfares by the water.

The motor car did heroic work at Dayton, and so did the men connected with the industry, but they suffered, too. The plant of the Stoddard-Dayton Company had the lower floor washed out completely, many of the office records floating away. It is said that in one of the buildings of the Stoddard-Dayton plant a number of people lost their lives. They ran into an office for safety, but were caught by the on-rush of water. It is estimated that the money loss is close to $15,000. The plant of the Dayton Engineering Laboratories Company is in the heart of the flooded section. It also had the lower floor washed out, the loss approaching $10,000. This factory was in operation day and night before the flood reached the city. Being upon slightly higher ground than the rest of the factories, the plant of the Speedwell Motor Car Company was not at all damaged by the mad rushing waters.

That great credit is due the chauffeurs and auto trade men who assisted in the rescue work at Dayton goes without saying, and the annals of the flood in the valleys of Ohio will chronicle the signal part played by the motor car in the memorable disaster of 1913. One cannot help but wonder how much more of death and suffering there would have been if the floods had come in the days before the auto was known.

SWIFT AND FREQUENTLY ENGULFED THE PROUD MOTOR CAR, TOSSING IT AMONG THE STRUGGLING HORSES OF THE STREET AS THOUGH NATURE IN A CYNICAL MOOD WISHED TO ILLUSTRATE ONCE MORE MAN'S IMPOTENCY IN HIS UNENDING FIGHT AGAINST THE MIGHTY ELEMENTS.